



EASYTRIP INFORMATION SYSTEM (ETIS) BACKEND SYSTEM

Perpustakaan SKTM

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UNIVERSITY OF MALAYA**

SESSION 2002 / 2003



EasyTrip Travel Information Backend System

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Abstract

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EasyTrip Travel Information System (ETIS) backend processing is my final year thesis project title. ETIS is a Web-based travel information system that build for the local hotels, restaurant and transportation company to promote their services. It also enables the World Wide Web user to get the complete travel information in Malaysia. ETIS backend system consists eight modules. There are Member registration and sign in module, Accommodations reservation module, E-partner module, Administrator management module, Report module, Newsletter generating module and Help system module.

These modules enable the web administrator to manage membership and partnership leveraging on Internet infrastructure. With this capability, the system is able to provide tightly integrated online real-time reservation, payment transaction, order and electronic information dissemination such as newsletters, events, and bulletin to its members, reports to its partners. System can automatically triggers emails based on member's preference whenever there are any promotions or hot deals by the partners.

This report introduces the ETIS backend processing system. It defines the objective, significance, scope and project schedule that should be identified before development of this system. Beside that, it has a description on the topic studied and researched during the literature research and literature review.

In the analysis phase, the Waterfall model with prototyping approach was selected for the development process because the strengths of both the Waterfall model and prototyping can be combined in a single project and reduces the risks involved. The development tool chosen was Microsoft Active Server Pages 3.0 whereas the web server was Internet Information Server 5.0 with back-end database SQL Server 2000. All were deployed on Windows 2000 platform.

In design phase, the topics covered are Architecture design, Process design, Database design and Interface design. There are many charts, diagrams, table and figures to show the design.

Acknowledgement

Acknowledgement

First and foremost, I would like to express my utmost gratitude to my project supervisor, Dr. Lee Sai Peck for her guidance, advice and encouragement. More importantly, she has given me a great opportunity to develop a travel information system, which interested me and the full freedom towards developing my proposed project.

I would like to take this opportunity to express my appreciation to Mr. Woo Chaw Seng for sparing his precious time to be my moderator. The advice and feedback are so useful for my project.

I would also like to extend my thanks and appreciation to my project partner, Miss Fong Pei Tee, for develop this project with me and sharing a lot of opinion and thoughtful contribution throughout this project besides providing me some crucial thoughts and advice.

A highly appreciation to all my friends and course mates who have been so helpful and cooperating in providing me some crucial thoughts and advice. Your patience, constructive criticism and suggestions were essential and much appreciated.

Last but not least, I would like to give my thanks and loves to my family.

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Chapter 1

Introduction

Chapter 1: Introduction

1.1 Title Definition

The EasyTrip Information System (ETIS) is the title for this project. The main point of the project is providing the traveling information via the Internet. Travel means to go from one place to another, usually over a long distance. [Oxford Advanced Learner's Dictionary]

Since the Internet has become one of the most amazing technological and social accomplishments of the century and millions of people are using a complex, interconnected network of computers. The opening of the Internet to business activity helped increased the Internet's growth dramatically. Electronic commerce takes part in electronic data transmission to implement or enhance any business process.

The EasyTrip Information System will be used to enhance and promote the tourism industry.

EasyTrip –

- ❖ “E” stand for “Economical”, this system will provide the most valuable tour package for the travelers, this system will also provide the budgeting calculation for the customers.
- ❖ “A” means “Absolute” that this system will offer the most absolute and complete services for travelers. We include the hotels, flights and buses schedule, travelers can also make accommodation reservation online.
- ❖ “S” for the “Smart” features of this system, includes the budgeting and e-report generating features.
- ❖ “Y” means “Yours” that our service will focus to the customers need.

1.2 Project Objective

1. The EasyTrip Travel Information System will help to stimulate the growing of E-Commerce, which will complement Malaysia tourist industries with the Internet. It introduces the hot spot of traveling destinations in Malaysia in a new way. It also adds in the new elements to Malaysia tourist industry.
2. It provides an opportunity for the local hotels and restaurants to promote their services. They can attach their services and promotions details to attract more customers. They also build up their own homepage through the simple and easy wizard that provided in this system.
3. This system can help the travelers to get the travel information by just a few clicks and they need not to go for several travel agencies just to gather the information. The travelers can choose their own tour packages based on their own interests, or based on the places of interest. All information in the site will be updated from time to time to make sure that the information receive by the users is the most updated and consistent.
4. The travelers can make the accommodation reservation online by fill in the e-form provided. They will receive the confirmation once it has been confirm.
5. The travelers can visit to our site whenever they wish to, 24 hours a day and 7 days in a week. Most of the people nowadays are busy at the office hours and they cannot have the time to visit the travel agencies during the office hours.
6. The system will collect the feedback from the customers and web visitors and the management team will analysis the feedback from the visitors to improve and maintain our services.
7. The system also tracking the visitors and analyze the web page that the visitors mostly visit. The result of the tracking system will also display in the e-report. This can help the management teams to know the needs of visitors.

1.3 Scope

My scope for this E-travel project is limited to develop the system for backend processing. At the final stage of implementation, my backend system will combine with the front-end system to form a complete system for EasyTrip Travel Information System. Several considerations were made during the implementation of backend system for EasyTrip Travel Information System.

1. Target Users

The target users for EasyTrip Travel Information System will be the World Wide Web users from all over the world. The target e-partner will include the existing and new established local hotels, restaurants and transportation related companies. They can register as the e-e-partner to attach their company and services details in our web site. They can also build a homepage for their company through a simple and easy wizard.

2. Maintaining a secure database

Create a secure, complete and reliable administrator database. Security features will be implemented on database and data transaction in order to maintain the confidentiality, integrity and availability of the database.

3. Performing the administrator tasks

The backend system will provide add, delete, update and edit functions to manage the records in database. The administrator can generate a monthly report to view the hits for the web site. They can also generate the report of feedback from the users to analyze and improve the system.

Administrator can generate newsletter for the member regarding to the promotion tour packages.

1.4 Expected outcome

The expected outcome is projected before the project work starts. There are a few factors due to the expectation, and one of the most important factors is the amount of time available to complete the project and the technologies and resources that are available.

The expected outcome for the EasyTrip Travel Information System backend system is a secure database with encryption. This database will store and provide the needed information for the ETIS.

The e-partner program is also an important expected outcome for ETIS back end system. The program is expected be able to create a well design homepage for those hotels and restaurants that have registered in our e-partner program and wishes to have their homepage created by our system.

The e-report generator module will be implemented to allow the administrator to view the reports for analysis and improve the site.

ETIS backend system is also expected to generate the newsletters that consist the latest information about the promotion packages or special offers from our e-partners. This will help our member to get the latest news from our website.

One of the important expected outcomes from EasyTrip Travel Information System backend system is a help system that will help our member and e-partner to use our system. The help system will contain the simple and easy to understand instruction.

Generally, the expectation from the ETIS backend system take account of the quality performance and other criteria such as reliability, security, stable, user friendly, in addition of fulfill the user's requirements.

This ETIS should allow for future enhancement as well as additional module to add functionality to this system.

1.5 Project Schedule

A project schedule describes the software development cycle for a particular project by numbering the phases or stages of a project and breaking each into discrete tasks or activities to be done over a period of time.

The schedule can be expressed using a work breakdown structure, the deliverables and the timeline to show what will be happening at each point during the project life cycle. A Gantt chart can be useful in illustrating the parallel nature of some of the development tasks.

The tasks of this project are listed as below:

- (i) Feasibility Study
- (ii) Requirements definition
- (iii) Requirement analysis
- (iv) Requirement design
- (v) Coding
- (vi) System documentation
- (vii) System Testing and Review
- (viii) Presentation

(i) Feasibility study

Feasibility study is conducted to determine the system of Travel Agency. Study about the technologies that will be applied on the project and existing online travel system will help to get more idea concerning the operating of a online travel system.

(ii) Requirement Definition

Requirement is a feature of the system or a description of something of the system is capable of doing in order to fulfill the system's purpose.

Requirement definition was defined and discussions were held with Fong Pei Tee and throughout the research to determine the requirements that will fulfill the needs of the user from all over the world.

(iii) Requirement Analysis

Requirement Elicitation is an especially critical part of the process. A variety of techniques to determine what the users and the customers really want.

Several techniques and algorithms are analyzed. Discussion have to be conducted to find out the exactly which techniques would be incorporated when designing the system. Decisions are made regarding the most effective way to develop the system.

(iv) Requirement Design

Requirement design is to design the user interface and system flow. This is important, as it will help to develop the system in an effective way as later stage of project implementation.

(v) Coding

Coding is the most important part of the project, and the most difficult part of the project. The process specifications produced at the design stage are coded using a suitable computer language such as Visual Basic, FoxPro or Java. For ease of maintenance, the program module must be properly structured.

(vi) System documentation

An important product of the system is a set of documents that describe the system to be built. The documentation is done almost simultaneously during coding. The documentation should outlining the critical issues and trade-offs that were considered in generating the design. Description of the components for the system also a part of the documentation.

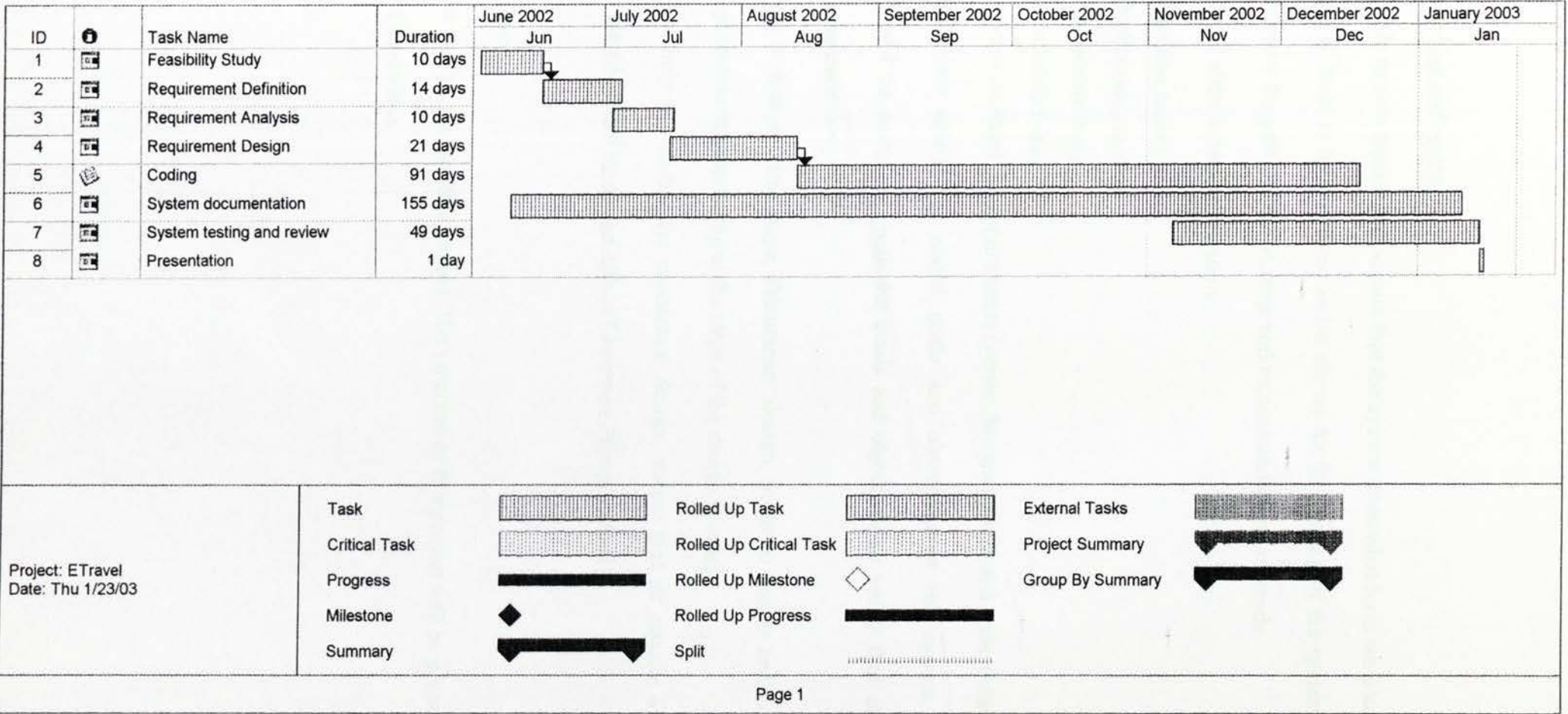


Figure 1.1: Gantt Chart of project schedule

(vii) System testing and review

The objective in system testing is to ensure that the system does what have we plan. The phase enables all bugs to be sorted out and it allows for fine-tuning of the system. The supervisor preview the web site at this stage and recommendations are made.

There are several steps in testing a system:

- (1) Function testing
- (2) Performance testing
- (3) Acceptance testing
- (4) Installation testing

The system review included the requirements review, designs review and code review.

Requirement review entails the stated goals and objectives of the system. The requirements will be comparing with the goals and objectives to verify that all the requirements are necessary.

Design review is done in three steps, Preliminary design, program design review and value of design review corresponding to the steps of the design process.

Design Review help to validate the conceptual design, ensure that all aspects of the requirements are addressed by design. (Shari Lawrence Pfleeger, 2001)

(viii) Presentation

Presentation is the last part for this project. The outcome of this project will be presented to lecturer and moderator.

.6 Limitation

- i. The EasyTrip Travel Information System is only concentrated in the local travel destination and local travel members. It will not include any other countries other than Malaysia.
- ii. The reservation services cannot provide the instant confirmation for our customer. This is due to our system is making the reservation to the hotels via email or manual processing. We have to wait the reply from the hotel before we give the confirmation to our customer.
- iii. We do not provide the online flight or train tickets booking because we do not have agreement with the flight or train company.
- iv. The ETIS does not include all the local hotels, restaurants and transportation information of Malaysia due to the large storage of data. Besides, there is a difficulty in searching some restaurants information for the other states in Malaysia.

1.7 Future Enhancement

The future enhancement for EasyTrip Travel Information System:

1. Provide the instant confirmation services on reservation; this will make the system more user friendly and efficiency.
2. Covers the tour packages for more countries or traveling destination, for example the countries in Asia.
3. Allow the online payment transaction, the system can accept the credit card payment through the online system.
4. Provide online booking system for flights and trains services.
5. Provide wireless online booking for WAP users since the WAP user is increased from day to day.
6. Provide more updated information about the local restaurants.
7. Increase the database storage capability in order to keep more data.

Chapter 2

Literature Review

Chapter 2 Literature Review

2.1 Literature Review

Literature review is an important part at the starting point of a project. It focuses on the background study about the information and knowledge, which are needed to develop the project. It used to obtain a better knowledge on the development strategies and requirements for the project. It makes review on the existing project and makes comparison among the developed-projects. The strengths and weakness of the existing projects will give a general review on how to improve the weakness and reduce the risk of the project if possible.

Literature review also included the survey and questionnaire methods to get the information from the public and analysis the main requirement from the public. This will help the developers to list out the functional requirements or non-functional requirements of the project.

2.1.1 Problems during the literature review

During the process of literature review, there are some problems have been occurred:

- ✦ The limitation of general knowledge about the business management and in addition for the online / internet-based business.
- ✦ The approach for the information regarding the online-transaction method is difficult since the electronic payment method is still new in Malaysia.
- ✦ Unable to identify the information, company requirement and the administration rules of a travel agency.
- ✦ Unable to ensure the requirements and information from the travelers.
- ✦ Difficulties in capture the user requirements and their expectation from the system.
- ✦ Limited exposure to the user to interface of the current web-based travel information system.

To deal with all the problems listed, I have make assessment to apply several literature revision strategies, for instance, make appointment and interview with the local travel agencies staffs to get more particulars about the general terms of an travel agency.

To capture the user requirement, I have choose using the questionnaire method to get the roughly ideas from the public. The details about the traveling web site also can be gain from the research via the World Wide Web to list out the strengthens and weakness of each web site.

2.2 List of Revised or Surveyed Resources

To develop a system, a lot of related information or facts need to be gathered and analyzed about the system itself, the producers involved to develop the system and the methodologies used to develop the system. This information can be collected from the choice of sources.

Basically each source will yield different information and details. The method of the research also will produce the different result. For instance, if Internet is being used, each keyword or phase that is being searched yields various sites. Related information can be obtained from the system users, computer program, producer manuals, reports, forms and documents.

Computer programs can be used to verify the details of data structures of processes. Produce manuals specify user activities in a business progression. Procedure manuals specify user activities in a business process. They can be used to determine detail user activities, which is important in detail system design.

Reports indicate the category of output that is required by the users.

Forms and documents are constructive sources of information about the system flows and transactions. If these sources are being used, the most recent and relevant forms and documents must be obtained and examined.

There are a variety of ways of collecting information from the system users including interviews to the local travel agencies, questionnaire to get the general idea from the public, and through a study on current travel web site either local agencies or foreign agencies.

Books, journals, related web site and the existing projects were used as a guide to acquire the associated information. This will also present an enhanced inspiration on the system developing.

The World Wide Web also provides a range of useful sources and information about the software to be used to develop the project, methodologies for the system development and information about the development tools. The search engines play an important role to provide the associated and practical web link. The search engines been used were google search, Yahoo search, MSN, Catcha and Excite.

2.2.1 Interviewing stuff from local travel agency

I choose to interview with a few stuff from the local travel agencies to get more subjective opinion and get more particulars about the management of a travel agency. For example, the type of services provided by local travel agencies, the problems faced by the travel agencies and the most complaints from the customers.

2.2.1.1 Question for interview with the travel agency

1. What are the services provided by a travel agency?
2. What is the information required by the travelers who travel in Malaysia?
3. What is the field of interest for the most travelers in Malaysia (for example: place of interest, local food?)
4. What are the customers mostly complaint to the travel agency?
5. Does the travel agencies provide the tourist guide to the travelers?
6. Does the travel agency have it own web site? If yes, then what are the features in the web site?
7. If no, are they interest to publish their travel agency online?

2.2.1.2 Analysis and findings

1. Marketing strategies from different travel agencies

Most of the travel agencies do not have their own websites. They also never implement web-based travel information system as their marketing strategy. This is may be the online travel system is still new in Malaysia and most of the travel agencies lack of exposure and knowledge of Information Technology.

2. Services required by the customers

Most of the local travelers prefer to let the travel agencies to settle every single thing for them. They would like the travel agency to estimate the frustrating problems and difficulties for them.

The services such as accommodation reservation, flight ticket booking, car rental service, and useful tourist guide are the basic requirements from the customers. As the travel industry is part of the serving industry, therefore an excellent service is crucial for the success of the industry. A professional consultant is also important for the travelers.

3. Complaints from the customers

The mostly complaint from the customers is they never get enough information about their trip. They do not know the details about their journey. They also always complaint for the price or cost is not worth for their trip. They also not satisfied with the customer's services provided by the travel agencies and this normally occurred when they have any problems or inquiries and they cannot find the person in charge of the trip.

However the travel agency argued that most of the customers are greedy and always request for the best with low price paid.

4. Relationship with other companies

Travel agencies will normally contacts with some of the hotels, Transportation Company, restaurant or other companies. The travel agency will enjoy a better rate for reservation but they have to guarantee that they will provide a certain amount of business for them with the contact period.

2.2.2 Questionnaire Method

A questionnaire is a document containing a set of standard questions that can be sent to many individuals for the purpose of collecting information about the system.

Advantages from the questionnaire method:

- ÷ It is the best technique to collect data from a large group of people
- ÷ The responses from different individuals can be tabulated and analyzed quickly
- ÷ The identity of the respondents will not be known; this will encourage the respondents to provide real facts

Disadvantages from the questionnaire method:

- ÷ Some individuals might think that the questionnaire is tedious to fill in and therefore not return
- ÷ The questionnaires are inflexible and the information gathered might not be able to reflect the real situation
- ÷ Good questionnaire are difficult to prepared

Questionnaire for EasyTrip Travel Information System

Age:

Occupation:

Gender:

Section A:

- | | Yes | No |
|--|---|--|
| 1) Have you been using Internet before? If No, proceed to Section B | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) Have you been visit to any homepage for travel agency either local or foreign country in the Internet before? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3) Do you satisfy and feel that the information which are provided by any online travel agency is sufficient?
If not, please state out the reasons.
(can choose more than one) | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Not enough information | | <input type="checkbox"/> The interface is not attractive |
| <input type="checkbox"/> The instruction of the system is not clear | | <input type="checkbox"/> The system is not interactive |
| <input type="checkbox"/> Too many information is crowded in one page | | |
| <input type="checkbox"/> Too many procedures required while making reservation | | |
| 4) Do you think that travel agency need to provides services such as analysis on hotels and restaurants? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5) Frequency of using Internet | | |
| <input type="checkbox"/> 1-5 times per month | <input type="checkbox"/> 6-10 times per month | <input type="checkbox"/> >10 times per month |
| 6) Purpose of using Internet | | |
| <input type="checkbox"/> Entertainment | <input type="checkbox"/> News | <input type="checkbox"/> Educational |
| <input type="checkbox"/> Chatting | <input type="checkbox"/> Research | <input type="checkbox"/> E-mail |
| <input type="checkbox"/> E-commerce | | |
| 7) Where do you usually connect to the Internet? | | |
| <input type="checkbox"/> Home | <input type="checkbox"/> Office | <input type="checkbox"/> School |
| <input type="checkbox"/> Cyber Cafe | <input type="checkbox"/> Others | |
| 8) In your opinion, what facilities provide convenience to traveler?
(can choose more than one). | | |
| <input type="checkbox"/> Online reservation | <input type="checkbox"/> Online payment | |
| <input type="checkbox"/> Online inquiries | <input type="checkbox"/> The most updated information | |
| <input type="checkbox"/> Map | <input type="checkbox"/> Transport schedule | |
| <input type="checkbox"/> Able to plan a trip within the budget that is given by the traveler | | |
| <input type="checkbox"/> Others, please specify _____ | | |
| 9) What kind of e-payment system do you prefer as a traveler? | | |
| <input type="checkbox"/> Cash | <input type="checkbox"/> Credit card | <input type="checkbox"/> Check |
| 10) Do you need a help system or FAQ on a travel agency system? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11) Do you willing to receive newsletter for special deals by travel agency? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12) Do you trust online reservation for hotels and transportation? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13) Will you purchase the online travel insurance? | <input type="checkbox"/> | <input type="checkbox"/> |

Section B

- 14) Do you feel inconvenient when you have to go to several places such as travel agency and car rental company to make reservation before going to a trip? ☐ ☐
- 15) Do you need a tourist consultant during your trip? ☐ ☐
- 16) How do you obtain information about places of interest in Malaysia?
- | | |
|--|--|
| <input type="checkbox"/> Leaflet | <input type="checkbox"/> Relatives and friends |
| <input type="checkbox"/> Contact travel agency | <input type="checkbox"/> Internet |
| <input type="checkbox"/> Magazines and newspaper | <input type="checkbox"/> TV/radio |
- 17) As a traveler, what kind of package do you prefer?
- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Tour package | <input type="checkbox"/> Tailor made package |
|---------------------------------------|--|
- 18) Please choose the information that you are interested if you are a traveler?
- | | |
|---|---|
| <input type="checkbox"/> Accommodation (hotels) | <input type="checkbox"/> Places of interest |
| <input type="checkbox"/> Foods (Restaurants) | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Others, please specify _____ | |
- 19) Kindly attach any suggestion about web-based travel agency system
- _____

2.2.3 Local and foreign online travel agency system review

There is a number of online travel agency that can search through the search engine. We will analysis and discuss the features of the web site and list out the potency and limitation of the modules in the web site. There are several modules that are same to our project scope. We will try to discover the special features, modify and integrate with our system. On the other hands, we also will identify the disadvantages for each module and try to avoid the limitation and try to transform it to a better way of system presentation.

We will focus on several online travel agencies for the review:

Foreign online travel agency system:

China e travel (url: www.chinaetravel.com)

Local online travel agency system:

MalaysiaTrails.com (url: www.malaysiatrails.com.my)

VisitMalaysia.com (url: www.visitmalaysia.com.my)

Pacific World Travel (url: www.pwt.com.my)

MayFlower.com (url: www.mayflower.com.my)

2.2.3.1 China e travel

The China e travel is one of the most complete foreign online systems that can search by the search engine. It encloses 22 modules that covered most of the importance aspects for traveling. The modules are generally divided into 7 categories: Home, introduction, reservation, member registrations, information, and web site info and advanced features.

Strengths of the system:

(1) Informative

The site is occupied with China traveling information. The site can promote the traveling destination and introduce China to the people from all over the world. The site includes the cultural, history and the attractive photograph of China.

It also lists out all the details for most of the destinations, hotels, restaurant, foods, and transportation that exist in China.

(2) Graphical User Interface

The appearance of the system is simple and nice. The design of the web site is put emphasis on on "user-friendly". All the pages for the module are standardized and the location of menu buttons is consistent. The user might not face any difficulties to find the button to link to the other page. The step of using the web site to do the transaction is simple and easy with the guidance and instruction provided.

(3) Introduce the China cultural and language in a special methods

This site provides a quiz for the visitors to test their knowledge about China. The questions are all about the history or cultural of China. This actually provides a good method to tell the visitors about China in an interesting way.

It also consist the page that teach the visitor to learn how to speak Chinese. It includes the pronunciation, meanings and the word for several categories such as greeting, urgent, and sightseeing in a city.

(4) Online Travel Insurance

It provides the online travel insurance purchase as an advanced feature for the members. It corporate with two insurance agencies. Travelers just needed to fill in the online form and submit it.

Weakness of the system:

(1) Complicated step to search for a particular information

If the user is not familiar with the computer, he/she may be found difficult to search for some details, for example, the foods module contain many pages and too many information, the user might be only want to have a quick search for a restaurant address and will be confused with these information.

(2) Lack of currency converter

This site does not provide the currency converter and it might be cause the inconvenient for the foreign travelers, all the costs in this site are state in US Dollar.

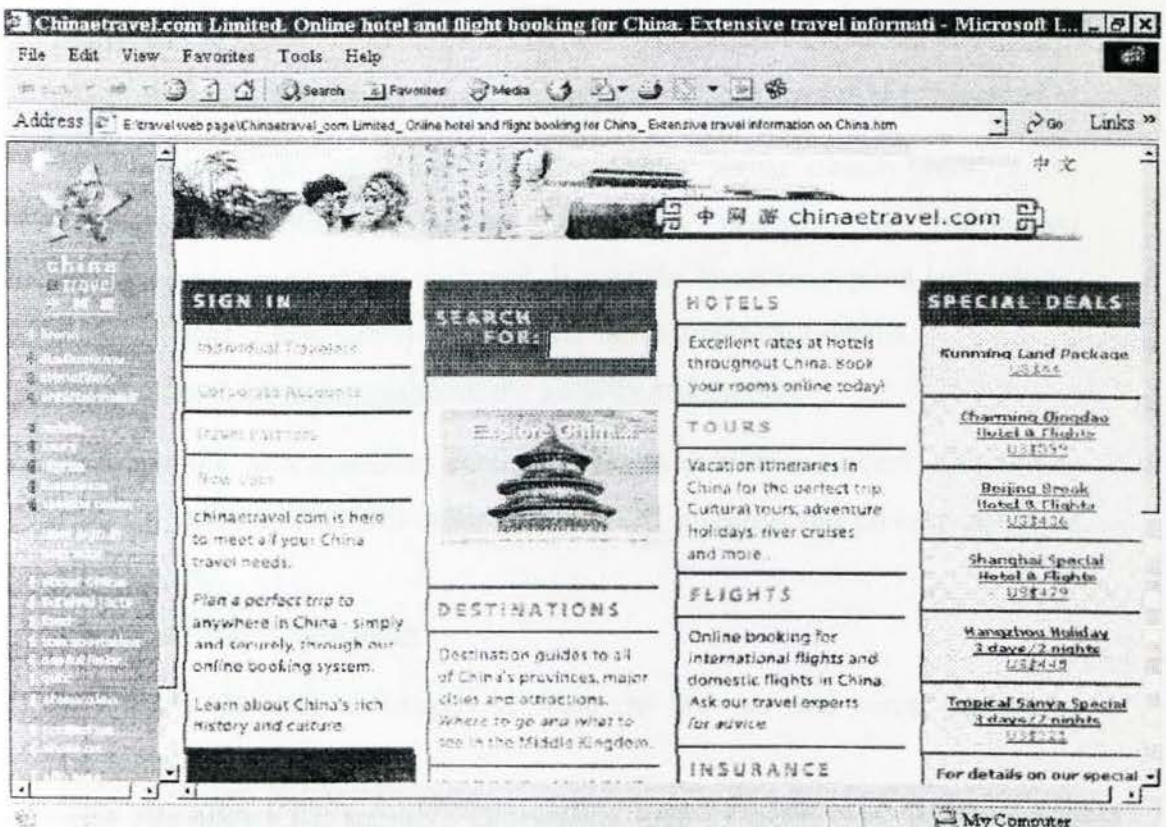


Figure 2.1: Home page for china e travel

2.2.3.2 MalaysiaTrails

This local online travel system introduces the latest exhilarating tours for the favorite traveling destination in Malaysia. The tour packages at a wholesale prices been offered by this site.

It provides the most suitable gateway package. It encourages the visitors to suggest the destinations and package that they felt exciting and suitable for the travelers. It cooperates with the government to promote local tourism industry.

Strengths of the system:

(1) Well-established GHL's payment server

This site includes the well-established GHL's secure payment server. GHL is one of the most popular payment clearance housing service providers in Malaysia.

(2) Protected information

User browser and MalaysiaTrails.com secure server usually encrypt the confidential information during transaction, ensuring the transaction processes is protected and sheltered. It uses the latest encryption technology, Secure Socket Layer (SSL) to safeguard user's credit card details.

(3) Accesses control to maintain the security and privacy

It allows the web master to control access to particular servers, directories, files or services. This will ensure the secrecy, integrity and privacy policy of the web site.

(4) Functionality efficiency

It ensures the data exchanged between the browser and server cannot be corrupted.

This site allows the sensitive information such as credit card number to be shares between browser and server, yet remain inaccessible to third party.

Weakness of the system:

- (1) The travel packages offered in this site is limited and do not covered the most favorite traveling destination in Malaysia.
- (2) The user must register as a member to enjoy the services and special features. The general surfers cannot get too much information from the site.
- (3) This site do not provide any online reservation service, it only provides few tour packages for travelers to choose from. It can cause the inconvenient for the user that wish to do the online reservation.
- (4) Lack of information about the promotion tour packages. Travelers cannot get the details about the destinations and the journey.

2.2.3.3 VisitMalaysia.com

VisitMalaysia is a local travel web site that introduces and promotes the traveling destination in Malaysia. It focuses on the information regarding to the place of interest in Malaysia. It describes the Malaysia cultural by the short description on the arts, crafts, music and national pastimes. It also consists the information about Malaysia's history, nature and activities or festivals in Malaysia.

Generally, it is an information-based web site that the user can get more knowledge about Malaysia through this site.

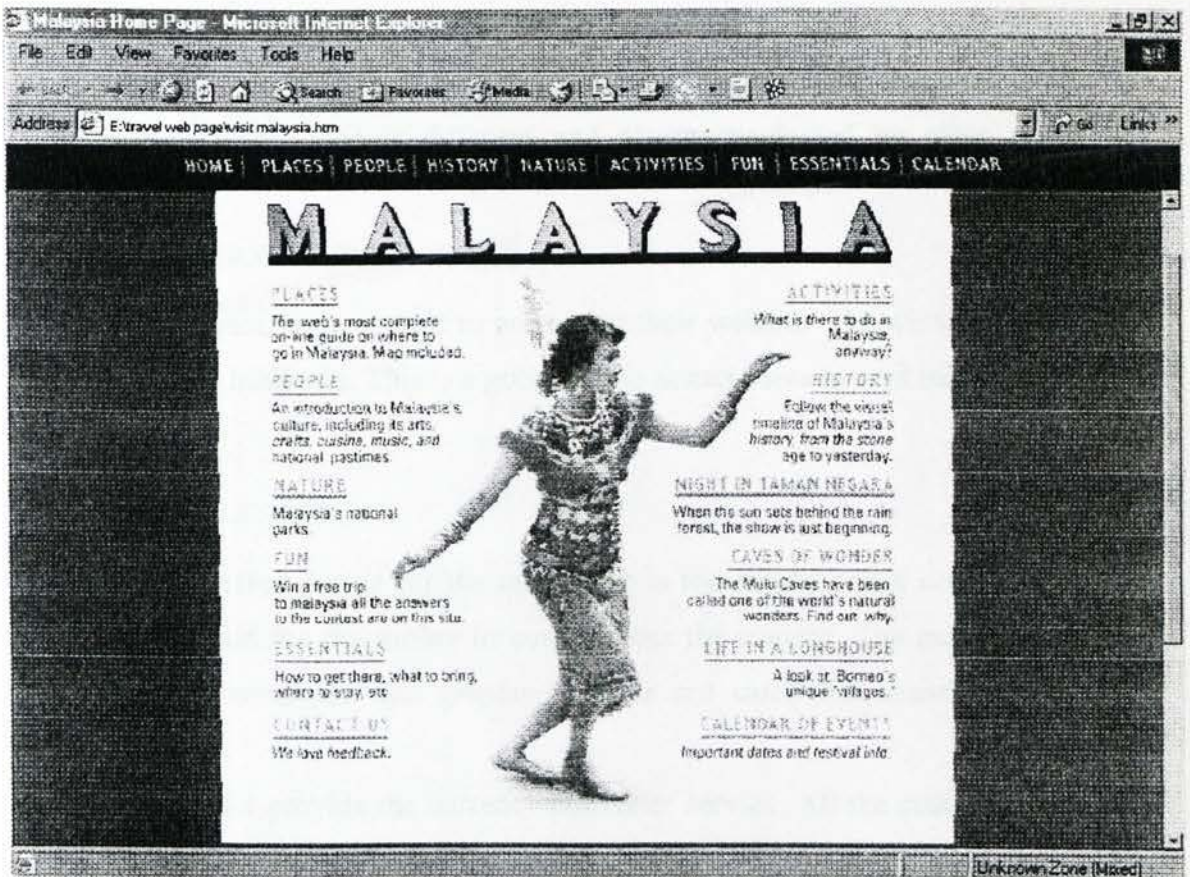


Figure 2.2: Homepage for visitmalaysia.com

Strengths of the system:

(1) Inclusive information

This site supplies the most comprehensive details about the traveling destination in Malaysia. In addition, the map of Malaysia is provided, this will help the travelers to identify the actual location of the destinations. They

can select the place of interest according to the state instead of random selection for the whole Malaysia.

It provides the particulars for the travelers regarding the accommodations, transportation, travel tips, restaurants, and tour operators through the essential features.

(2) Interactive features

It provides some special features like using the Real Player to listen a streaming recording of Malaysia's jungle and special page design and layout to introduce The Mulu Cave in Sarawak.

(3) Stated important date and festival

It states the important date and festival in Malaysia. This will provide the opportunity for the travelers to celebrate the festival together with Malaysians. This idea is different and always neglected by other travel agency site.

(4) Contest to win free trip

This site organizing a contest to promoting their website. The winner will get a free trip to Malaysia. This is a good idea to attract users to surd this site.

Weakness of the system:

- (1) The interface design for the main page is too simple and it could be the obstruction for the surfers to come across the content. The main page is lack of animation and graphic, it does not catch the attention of the surfers.
- (2) It does not provide the currency converter service. All the cost is state in Ringgit Malaysia (RM)
- (3) It does not include any smart features, for instance tour planning program or budgeting program.
- (4) The information in the site is static and probably outdated.

2.2.3.4 Pacific World Travel

Pacific World Travel with 30 years experience in local tourism industry has become the preferred partner for several travel leaders from all around the world.

It becomes the good chance to expand the services into the dynamic market.

As the leading General Sales Agent in Malaysia, Pacific World Travel offers representation with the unparalleled service. Pacific World Travel are one of the few companies in Malaysia, which specialize in providing a valuable link between principles and the travel trade in Malaysia and Brunei.

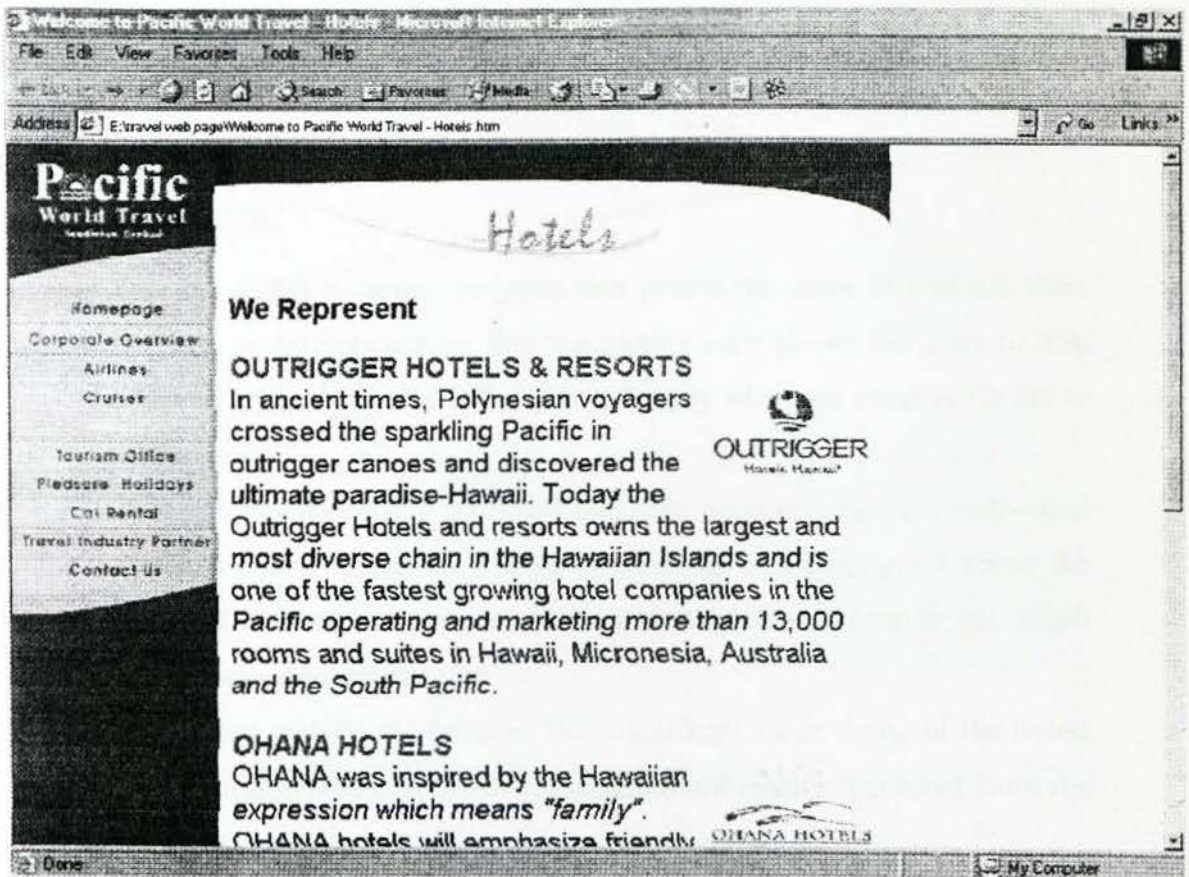


Figure 2.3: Interface for hotels module in Pacific World Travel

Strengths of the system:

(1) The efficiency of reservation service

The reservation and enquiries from the customers for online and offline is being proceed rapidly.

(2) Significant information

The web site supply the local facilities, for instance premises, local communication, dedicated sales executives and marketing information for the specific purposes of handling field sales, research and marketing.

(3) Let the members keep track with the latest news

This site organizes direct mailing and personal distribution of timetables, brochures, tariffs and other promotional material to keep people knowledgeable.

(4) Undertake personal sales calls to all sources of existing and potential business with emphasis on outbound travel agency, consolidated tour producers and wholesales, ticketing agents, cargo agents, airline associations and corporate accounts.

Weakness of system:

- (1) This site offers e-partner program that permit the users to promote their products or services online. But the service only allows the users to link their web site to this site. It does not offer any advanced features for the e-partner.
- (2) This site is concentrate more on business purposes than the individual travelers does. Therefore, it does not include any description about the place of interest or accommodation details. Users cannot get much information through this site.
- (3) It does not include the features like classifications or rating of the hotels or restaurants. These types of information are mostly requested from the travelers.
- (4) It does not provide any tour packages for the users to choose from. The travelers may be not interested to surf a web site that does not provide any service or useful information for them.

2.2.3.5 MayFlower.com

The MayFlower initiates the traveling destination in Malaysia as a holiday and conference destination. The site try to make their clients' trip an enjoyable and delightful experience.

It delivers the best value in the market by providing eminence products and excellent services at an acceptable price and aspires to be the lowest total cost producer.



Figure 2.4: Main page for the MayFlower web site

Strengths of the system:

(1) Tailor-made tours available

This site provides the tailor-made tours for frequent independent travelers. This provides an exciting way for the travelers to plan their own trip.

(2) Facilities and conveniences

This site consists many facilities for the travelers, includes the transportation, shore excursions, schedule coach tours, driving tours, car rental company, package tours, hotel reservations, agent representation, airline ticketing, meeting and incentive planning.

(3) Security ensured

The site includes the security measures; use to protect the loss, misuse and alteration of the information under the user's control. All account have password and the server itself is locked down as tight as possible.

(4) Fully and complete details for the accommodations in Malaysia

It clearly stated the accommodation services, class, location based on the state in Malaysia.

It also supplies the rating of accommodations that are based on the MayFlower's assessments.

Weakness of the system:

- (1) The reservation process embraces complicated steps. There is no user guide for the user to refer and this might be confused the users.
- (2) It also endows with e-partner program and there are a lot of partners but no one can upload their information directly through the MayFlower's database.
- (3) It is lack of information about the place of interest. User cannot get many particulars for the traveling destinations but they can do the online booking or reservation.

Web Site Features	China e travel	Visiting Malaysia	Malaysia Trails	MayFlower	Pacific World Travel
Membership	•	•	•	•	
E-partnership	•			•	
Search engine	•	•			
Transaction Processing	•				
Tour packages in promotion	•	•			•
Accommodations Reservation	•			•	•
Airline ticket booking	•			•	•
Car Rental Service	•			•	
Hotel Ranking	•			•	
Administrator part					•
Travel Insurance Information	•				
Weather Check			•		
Map		•		•	
Tailor-made / budgeting tours	•			•	

Table 2.1: Comparison between the existing online travel agency system

2.2.4 Problems in current Travel Agency Information System

1. Most of the travel agencies in Malaysia apply the information system just in the office and the related branches; they do not implement the information system online. The information systems implemented in the travel agencies assist to ease the staff's burden in the daily operations. These travel information systems are only focus on the internal agency's operation functionality, it do not include the customer's services.
2. Local travel agencies concentrate on the tour package promotion with the fixed cost. The travelers cannot choose the destinations or accommodation they like since that everything has been fixed for the package. In addition, only the travelers with the affordable budget afford to choose the tour package. Some of the travelers will prefer the self-budgeting tour with the professional consultant from the travel agency.
3. The promotion and advertisement of tour packages for local travel agency usually through the general mass media such as newspaper, radio, magazines, poster and exhibition. The existing local travel agency's web sites are mostly information-based site that introduce the company profile. Due to this fact, local travel agencies are finding difficulties to grow up to a better state. Nowadays, the world trends to be globalize and fast

shaking, the traditional barriers of time, space and form will be eliminated. The advertised and promotion through the mass media are not enough to promote the Malaysia travel industry.

4. The existing online travel agencies are concentrating on the travelers' side but neglecting the administrator side. The administrator side consist the accommodation service, airline ticket booking service and restaurant information.

2.3 Internet

In the late of 1960s, the U.S. Department of Defense, through the Advanced Research Projects Agency (ARPA) sponsored a series of project designed to create a network of computers that could communicate with one another over long distances. This network came to known as ARPANET.

In 1990, the Department of Defense decommissioned ARPANET, leaving U.S. networking responsibilities to NFS, NASA and a few other agencies. The NFS relaxed its Fair Usage Policy, which had restrained commercial activities on the Internet, and increased the carrying capacity of its network backbone considerably. As a result, more and more commercial firm joins the network. Many regional network providers, both commercial and subsidized, were also connected, and the Internet, or Information Highway, emerged as a collection of diverse computer network that span the globe.

Since 1990, the Internet has experienced incredible growth. No doubt one of the primary reasons for this has been the introduction of the hypertext system known as the World Wide Web (WWW). File Transfer Protocol (FTP) enabled users to transfer files between computers and Telnet let users log on to their computer accounts from remote sites. More advanced techniques are now available that allow multimedia transmissions such as real time audio and video clips.

National Science Foundation (NSF) prohibited commercial network traffic on its networks, so businesses turned into commercial e-mail service providers. Larger firms built their own networks that used leased telephone lines to connect field offices to corporate headquarters. In 1991, the NSF further eased its restriction on Internet commercial activity and begins implementing plans to privatize the Internet. The privatization of the Internet was substantially completed in 1995, with the NSF decommissioning its Internet backbone.

The opening of the Internet to business activity helped increase the Internet's growth dramatically; however, there was another development that worked hand-in-hand with the commercialization of the Internet to spur its growth. That development was the World Wide Web.

(Ken Abernethy & Tom Allen, 1999)

2.4 E-Commerce

Electronic commerce means the use of electronic data transmission to implement or enhance any business process. It can also be refers to the process of buying or selling a product or services over an electronic network. The most popular medium in which E-Commerce is conducted is the Internet.

E-Commerce encompasses three types of business transaction.

- ✦ Transaction between a business and a consumer

- ✦ Transaction between one business and another

A business that engages in this type of E-commerce is typically less visible to consumers and therefore, to the general public.

- ✦ Consumer-to-consumer transactions

It enables it customers to auction items to other customer.

2.4.1 Advantages of E-commerce

- ✦ Electronic commerce can increase sales and decrease costs

Electronic commerce can used to reach narrow market segments that are widely scattered geographically. The Internet and the web are particularly useful in creating virtual communities that become ideal target markets.

- ✦ Electronic commerce increases purchasing opportunities for the buyers

It provides buyers with a wider range of choice than the traditional commerce, because they can consider many different products and services from a wider variety of sellers that evaluate 24 hours a day, 7 days in a week.

- ✦ General welfare of society

Electronic payments of tax refunds, public retirement, and welfare support cost less to issue and arrive securely and quickly when transmitted via the Internet. It also can be easier to audit and monitor than payments made by check, which can help protect against fraud and theft losses. E-commerce enables people to work from home and make the products and services available on remote areas.

2.4.2 Disadvantages of E-Commerce

+ Newness and rapidly developing pace of the underlying technologies

Many products and services require that a critical mass of potential buyers be equipped and willing to buy via Internet. The delivery services may be only valid in a few cities.

+ Difficulties in electronic commerce in investment

The costs needed for the new technologies can change dramatically during even short-lived electronic commerce implementation projects, because the underlying technologies are changing so rapidly. Many firms have had trouble recruiting and retaining employees with the technological, design, and business process skills needed to create an effective electronic commerce presence.

+ Cultural and legal impediments

Customers still fearful of sending their credit card numbers through the Internet.

Some customers are simply resistant to change and are uncomfortable viewing merchandise on a computer screen rather than in a person.

The legal environment in which electronic commerce is conducted is full of unclear and conflicting laws. In many cases, government regulators have not kept up with technologies. Laws that govern commerce were written when signed documents were a reasonable expectation in any business transaction.

(Gary P. Schneider and James T. Perry, 2000)

2.5 Legal Consideration for E-Commerce via Internet

2.5.1 Laws

Businesses that operate on the web must comply with the same laws and regulations that govern the operations of all businesses. If they do not, they face the same set of penalties, including fines, reparation payments, and even jail sentences for officers and owners, that any business faces.

2.5.1.1 Copyright

Copyright and safeguarding intellectual property rights also are security issues, although they are protected with different countermeasures.

Copyright is the protection of expression- some entity’s intellectual property- and it typically covers items such as literary and musical works; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works.








<i>The following categories of works have copyright protection:</i>	
	Literary works
	Musical works, including any accompanying words
	Dramatic works, including any accompanying music
	Pantomimes and choreographic works
	Pictorial, graphic, and sculptural works
	Motion pictures and other audiovisual works
	Sound recordings

Table 2.2: Copyright Protection for categories of works

2.5.1.2 Intellectual Property

Intellectual Property is the group of legal rights in things people create or invent. Intellectual property rights typically include patent, copyright, trademark and trade secret rights.

The heart of intellectual property law is the balancing of

- (a) Financially rewarding creation through granting of exclusive rights to the author
- (b) Promoting the free flow of ideas to facilitate more creation.

After inventing a work, the inventor must apply for and obtain a patent. In order to patent something, inventor should have a patent attorney, licensed to practice before the Patent Office, assist inventor with the application. Upon receipt of inventor application, the Patent Office will examine inventor application to determine if it meets the legal requirements for obtaining a patent. (http://www.internet-law-library.com/internet_law_library/ip/trademark.php)

2.5.1.3 Trademark

A trademark is a word, phrase, symbol or design, or combination of words, phrases, symbols or designs, which identifies and distinguishes the source of particular goods or services. A service mark is the same as a trademark except that it identifies and distinguishes the source of a service rather than a product.

Having trademark rights is also important with regard to current law and domain names. Presently, the USPTO will not register a domain name that does not merit trade or service mark rights under traditional analysis. The name by itself is considered merely an address. Thus, it is very important to be sure to use your domain name as a trade or service mark in order to ensure retention of the domain name. Under current law, trademark owners may be granted ownership of their trademarks through arbitration or court if a party without trademark or other rights is using their mark -- in other words, trademark holders can take domain names, which utilize their marks from registrants.

(http://www.internet-law-library.com/internet_law_library/ip/trademark.php)

2.6 Electronic Payment System

Implementation of electronic payment systems is in its infancy and still evolving. The technical, economic, cultural, and legal components of electronic payment systems are not fully understood.

Electronic payments are far cheaper than using the dead-tree method of mailing out paper invoices and then later processing received payments.

There are currently three basic ways to pay online- cash, check, or credit card. Electronic cash distribution and payment can be handled by wallets, smart cards, or through proprietary, limited-used scrip. Scrip is digital cash minted by a small number of third-party organizations. Electronic checks represent a small but growing percentage of online payment transactions. Credit and debit cards are by far the most popular form of electronic payment. A recent survey indicates that over 80 percent of Internet purchases are paid for with credit (or debit) cards. Debit cards, which draw directly from user's bank account in the same way checks do, also are used for online transaction processing.

Electronic cash have two important characteristics in common with real currency. First, it must be possible to spend electronic cash only once, just as with real currency. Second, electronic cash ought to be anonymous, just as real currency is. Online cash storage means that the consumer does not personally have possession of electronic cash. Instead, a trusted third party- an online bank- is involved in all transfer of electronic cash and holds the consumer's cash accounts. Off-line cash storage is the virtual equivalent of money user keeps in user wallet. The customer holds it, and no trusted third party is involved in the transaction.

2.6.1 Electronic Wallets

Electronic wallet holds credit cards, electronic cash, owner identification, and owner address information and provides that information at an electronic commerce site's checkout counter. A product of Launchpad Technologies, eWallet is free wallet software that consumers download and install on their computer. It is not stored on a central server along with other's wallets. Personal and payment information is stored inside the electronic wallet.

2.6.2 Digital cash

Digital cash is "virtual" money, which is stored on user's computer system and allows user to purchase stuff over the Internet. There are several commercial approaches to digital cash on the Web. Among these are eCash from DigiCash and Cybercash.

2.6.3 Smart Card

A smart card is a card that is embedded with either a microprocessor and a memory chip or only a memory chip with non-programmable logic. The microprocessor card can add, delete, and otherwise manipulate information on the card, while a memory-chip card (for example, pre-paid phone cards) can only undertake a pre-defined operation.

Smart cards, unlike magnetic stripe cards, can carry all necessary functions and information on the card. Therefore, they do not require access to remote databases at the time of the transaction.

(<http://www.smallbizinfocenter.com/offsite.asp?ID=1610>)

2.7 Internet Security Issue

All communication over the Internet uses the Transmission Control Protocol/Internet Protocol (TCP/IP). TCP/IP allows information to be sent from one computer to another through a variety of intermediate computers and separate networks before it reaches its destination.

The great flexibility of TCP/IP has led to its worldwide acceptance as the basic Internet and intranet communications protocol. At the same time, the fact that TCP/IP allows information to pass through intermediate computers makes it possible for a third party to interfere with communications in the following ways:

÷ **Eavesdropping.** Information remains intact, but its privacy is compromised. For example, someone could learn your credit card number, record a sensitive conversation, or intercept classified information.

÷ **Tampering.** Information in transit is changed or replaced and then sent on to the recipient. For example, someone could alter an order for goods or change a person's resume.

(<http://developer.netscape.com/docs/manuals/security/pkin/contents.htm#1041271>)

2.7.1 Encryption Issue

Ensuring the messages are secure is quite difficult if the distance between senders and recipient is anything other than trivial. It is better to assume that someone will, in fact, intercept the message but, in turn, guarantee that they won't be able to read and interpret it. Cryptography is the art and science of keeping messages secret. Encryption techniques, which convert data into a secret code for transmission, are central to subject.

Using encryption techniques, the original text, or plaintext, is converted into a coded equivalent called the ciphertext using an encryption algorithm. The ciphertext is then transmitted and decoded at the receiving end, reproducing the original plaintext message. The process of retrieving the original message from the ciphertext is called decryption. Encryption/decryption methods are often called cipher for short. (Ken Abernethy & Tom Allen, 1999)

The major applications for encryption may then be summarised as:

- To protect privacy and confidentiality.
- * To transmit secure information (e.g. credit card details)
- ÷ To provide authentication of the sender of a message.
- ÷ To provide authentication of the time a message was sent.

2.7.2 Public Key Cryptography

Public key encryption is based on cryptographic technology whereby two complementary keys—a key pair—are used to maintain secure communications. Cryptography transforms data by using a key to make the data incomprehensible to all except its intended receivers.

(<http://developer.netscape.com/docs/manuals/security/pkin/contents.htm>)

Unencrypted data is called *plaintext*; encrypted data is called *ciphertext*. Only the intended receivers should have the corresponding key to decrypt the *ciphertext* into *plaintext*.

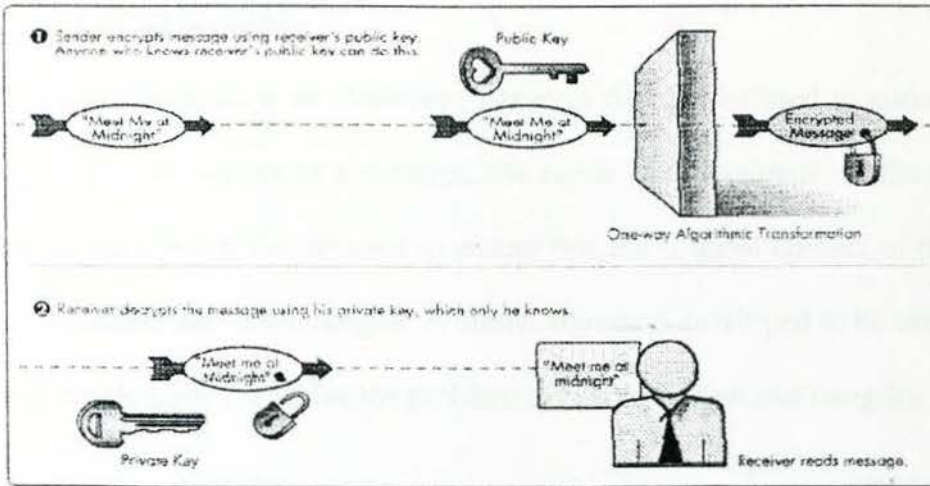


Figure 2.5: Public Key Cryptography

Public key cryptography uses two related keys – a public keys and a private key. Its owner keeps the private key secret. The public key is freely distributed. If the public key is used to encrypt a message, only the corresponding private key can decrypt it, and vice versa. Each party in the transaction has both a public and a private key. To transmit a message securely, the sender uses the receiver's public key to encrypt the message. The receiver decrypts the message using the receiver's unique private key. No one else know the private key, so the message cannot be read by anyone other than the intended receiver; this ensure the privacy of the message. (Deitel, Deitel & Nieto, 2000)

2.7.3 Digital Signature

A digital signature is an electronic signature that can be used to authenticate the identity of the sender of a message, the signer of a document, or the owner of a credit card. It can also be used to ensure that the original content of the message or document sent is unchanged. A digital signature developed to be used in public key cryptography, to solve the problem of authentication and integrity.

To create a digital signature, the sender takes the original plaintext message and runs it through the hash function, which is a mathematic calculation, to give the message a hash value. The sender uses its private key to encrypt the message digest, thus creating the digital signature and authenticating the sender because only the owner of that private key could encrypt it. The original message encrypted with the receiver's public key, the digital signature and the hash function are sent to the receiver. The receiver uses the sender's public key to decipher the digital signature, and reveal the message digest. The receiver then uses the sender's public key to decipher the original message. Finally, the receiver applies the hash function to the original message. If the hash value of the original message matches the message digest included in the signature, then the message has integrity – it has not been altered in transmission.

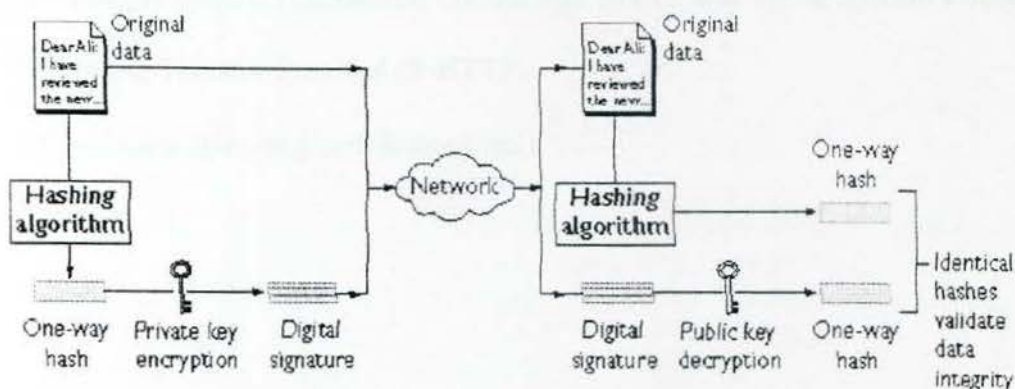


Figure 2.6: Digital Signature

2.7.4 SET™ (Secure Electronic Transactions™)

SET (Secure Electronic Transaction) is a system for ensuring the security of financial transactions on the Internet. MasterCard, Visa, Microsoft, Netscape, and others supported it initially.

Merchant must have a digital certificate and special SET software to process transaction. Customers must have a digital certificate and digital wallet software. The digital wallet stores credit (or debit) card information for multiple cards, as well as the digital certificate verifying the cardholder's identity.

The transaction is conducted and verified using a combination of digital certificates among the purchaser, a merchant, and the purchaser's bank in a way that ensures privacy and confidentiality. In the SET protocol, the merchant never actually has seen the client's proprietary informational. Therefore, the client's credit card number is not store on the merchant's sever, so this method reduces the risk of fraud. SET makes use of Netscape's Secure Sockets Layer (SSL), Microsoft's Secure Transaction Technology (STT), and Terisa System's Secure Hypertext Transfer Protocol (S-HTTP).

(<http://www.setco.org/certificates.html>)

2.8 Database Implementation Concepts

Database implementation concepts includes:

- a) Relational database
- b) Database management system
- c) Relational Database Management System
- d) Structure Query Language
- e) Storage procedure

2.8.1 Relational Database

The basic data components of a relational database model are entities and their attributes. These basic data components fit into a logical construct, known as tables. The process of organizing data into tables in a consistent and complete format is referred to as normalizing the database.

(http://www.oracle.com/html/8i_vs_sql.htm)

Each independent table can be related to each other by creating relationships among them. A primary key of a table is a field of this table selected to uniquely identify all other attribute values in any given row, and cannot contain null entries. A foreign key is an attribute, or a combination of attribute in one table. Whose values must either match the primary key in another table or to be null.

2.8.2 Database Management System

Database management system is an environment specially created for working with database. It refers to an electronic system, or a computer program design to work with database. (http://www.oracle.com/html/8i_vs_sql.htm)

Examples of Database Management System include Microsoft Access and FoxPro.

2.8.3 Relational Database Management System

Relational Database Management System such as SQL Server, a database is not necessary tied to a file. It is more of a logical concept that is based on a collection of related objects. (Elmasni, R., 1994)

2.8.4 SQL

SQL is designed specially for database queries. This language has three main parts, namely DDL (Data Definition Language), DML (Data Manipulation Language), and Model Language. (Worpoy, M., 1989)

Data Manipulation Language used to manipulate data stored in the database queries. This language has 3 main parts, namely Data Definition Language (DDL), Data Manipulation Language (DML) and Model Language.

Data Manipulation Language used to manipulate retrieving records. SQL can be used within source codes for programming languages, such as COBOL. This is called embedded SQL. Therefore, it is a model language. (Worpoy, M., 1989)

2.8.5 Stored Procedure

A store procedure is a series of precompiled SQL statement and control of flow language statements. Stored procedures can enhance standard SQL by allowing you to use parameter, make decisions, declare variables and return information.

2.9 Databases

2.9.1 Microsoft Access 2000

Microsoft Access is a powerful database management system, which collects information related to a particular subject or purpose. By using Microsoft Access, we can manage all the information from a single database file. Within the file, the data can be divided into separate storage containers called tables. Besides storing information, Microsoft Access provides extensive new features designed in development of Web Enabled application. (Sellappan, P., 1999)

Microsoft Access offers an easy-to-use database for managing and sharing data. It brings not only the traditional broad range of easy data management tools but also adds increased integration with the Web for easier sharing of data across a variety of platforms and user levels and additional ease-of-use enhancements to assist with personal productivity.

The advantages of using Microsoft Access 2000 include:

- a) It is an easy-to-use tool. It can find the information that provides consistency and integration with the other applications.
- b) It allows the users to share information via the corporate intranet and the ability to easily host a database within the browser. This combines the power of a desktop database with the power of the web.

(<http://www.microsoft.com/catalog/display.asp?site=769&subid=22&pg=1>)

2.9.2 SQL Server

Microsoft SQL Server 2000 Enterprise Edition is the complete database and analysis offering for rapidly delivering the next generation of scalable e-commerce, line-of-business and data warehousing solutions.

Microsoft SQL Server is a significant tool in many regards. From data warehousing to applications that require not only a large amount of information, but also many different simultaneously users, SQL Server is a key component in answering data management requirement. It is a powerful and comprehensive database. (Smith, Eric A., 1999)

Advantages of SQL Server

1. SQL Server is fully web-enabled, Query, analyze and manipulate data over the Web. SQL Server 2000 Use Extensible Markup Language (XML) to exchange data between loosely coupled systems. It access data easily and securely from a browser, through firewalls, and perform fast full-text searches of formatted documents. Analyze and link online analytical processing (OLAP) cubes, even over the Web.

2. SQL Server is highly scalable and reliable. It grows without limits with enhanced scalability and reliability features. It partitions users' database workload to achieve scale-out of applications. It also takes full advantage of Symmetric Multiprocessing (SMP) hardware, and, with the Microsoft Windows 2000 Data center.

3. SQL Server rapidly builds, deploys, and manages e-commerce, line-of-business, and data warehousing solutions. It performs sophisticated data mining on customer and financial data. It also reduce development time with the integrated T-SQL debugger, and develop user's own functions that can be reused in different applications. SQL Server 2000 provides the fastest route to Web application development.

(<http://www.microsoft.com/sql/worldrecord>)

2.9.3 Oracle 9i Database

Oracle9i Database is the state of the art in object-relational databases.

Advantages of Oracle 9i Database

1. Advanced Features

Oracle 9i Database provides the advanced features in transaction processing includes Row Level Locking, Materialized Views and Data Partitioning.

2. Reliability

Oracle Data Guard, a complete data protection scheme that can quickly recover from all manners of failures, from site failures and data center disasters, to human error and data corruptions.

The flashback query feature allows application developers to build in error correction capabilities into their applications so that end users mistakes can be corrected without having to do a recovery operation on the database.

3. Security

The security features include the Single Sign-On Oracle Advanced Security, Selective Data Encryption and Secure Data Sharing.

The ability to natively encrypt data in the Oracle9i Database enables applications to guard their sensitive data, even if unwanted intruders gain access to the server.

Oracle Label Security is a powerful row level security solution based on labeling concepts used by government and defense organizations to protect sensitive information and provide data separations.

4. Data Integration and Messaging

Data integration and messaging includes the Message Queuing, Database Replication and Legacy database data gateways.

5. Content Management

Content management includes the features like Intelligent File System, Manage all content types, Powerful text processing and search, Out of the box search engine and Location based services

(http://www.oracle.com/ip/deploy/database/oracle9i/index.html?oracle9idb_features.html)

2.9.4 Database Connection

A database connection is needed to connect from the database to read data from the web page. A suitable data access interface can result in better performance, easier of programming steps and also programming flexibility.

2.9.4.1 Open Database Connectivity (ODBC)

ODBC is a standard database access method developed by Microsoft Corporation. The goal of ODBC is to make it possible to access any data from any application, regardless of which database management system (DBMS) is handling the data. (Ashton H., 1997)

When programming to interact with ODBC user only need to talk the ODBC language (a combination of ODBC API function calls and the SQL language). The ODBC Manager will figure out how to contend with the type of database user are targeting. Regardless of the database type is using, all of calls will be to the ODBC AP.I. As mentioned earlier, all that need to do is have installed an ODBC driver that is specific to the type of database you will be using.

- | | |
|---------------------|------------------------------|
| 1. Microsoft Access | 5. Microsoft ODBC for Oracle |
| 2. Microsoft dBase | 6. Microsoft Paradox |
| 3. Microsoft Excel | 7. Microsoft Text |
| 4. Microsoft FoxPro | 8. Ms SQL Server |

Table 2.3: The ODBC drivers are available in ODBC version 4.0

For a web database application, System DSN is the most appropriate choice of DSN because the database can be access by every user. The ODBC drivers will depend on the DBMS used in the system.

2.9.4.2 ActiveX Data Objects (ADO)

The ActiveX Data Objects (ADO) might be thought of as being the friendly face of OLE-DB. ADO is a set of objects that allow programmers to program their data access logic from languages like Visual Basic as well as scripting languages. ADO is a higher- level model than OLE-DB, which means that it simplifies some of the complexities of programming with OLE-DB. Thus, ADO is much easier to use than OLE-DB.

The ADO layer sits neatly between the applications itself and the OLE-DB layer. As an example, the ADO objects will be referred to explicitly within the code of ASP pages, instructing them to read records, update data, and carry out other tasks that relate to the data in the data stores.

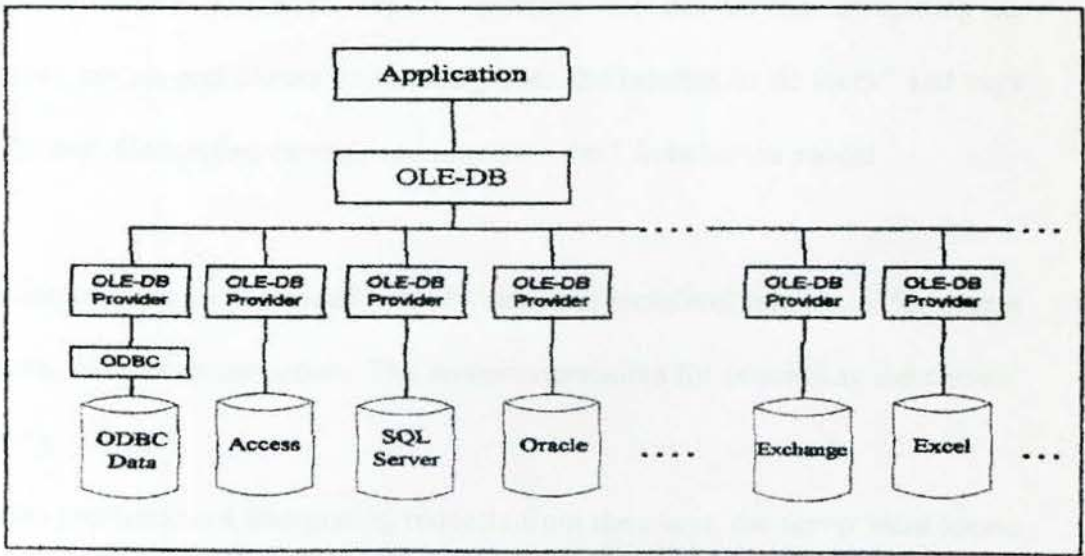


Figure 2.7: Data access through OLE-DB

If any database programming has been done in Access or Visual Basic, then Data Objects (DAO) or Remote Data Objects (RDO) would have been come crossed. It is fine, because ADO is a superset of DAO and RDO and is much easier to understand.

2.10 Software and Technologies

2.10.1 Client-server Architecture

Client/Server computing is a style of computing involving multiple processors, one of which is typically a workstation and across which a single business transaction is completed. (Pleefger, C.P., 1997)

Client/Server computing recognizes that business users, and not a mainframe, are the center of a business. Therefore, Client/Server is also called “client-centric” computing.

Today, Client/Server computing is extended to the Internet—net centric computing (network centric computing), the concepts of business users have expanded greatly. Forrester Report describes the net centric computing as “Remote servers and clients cooperating over the Internet to do work” and says that Internet Computing extends and improves the Client/Server model .

The clients’ computers typically request services, including printing, information retrieval, and databases access. The server responsible for processing the clients’ requests.

Besides receiving and interpreting requests from the client, the server must locate information, reprocess it and request initialization of resources supplied by other applications running on the dedicated computers under the server’s control.

In contrast to the server, clients require no more capability than is found on any ordinary personal computer.

The web client requests information from a particular web server on a distant computer. The requests is formulated into an HTTP request and sent to server.

When the target server receives the requests, it retrieves the page or other information that the server requests, formulates it as a HTML formatted page, and send it back to the requester clients via Internet. When the requested information arrived at the client's computer, the Web browser software determines the information and displayed the page on the client's machines.

2.10.1.1 Two-tier Clients/Server

A two-tier model includes only a client and server. All communication takes place between the client on the Internet and the target server over at the other end. Two-tiered architecture is also known as the client-centric model, which implements a "fat" client. Nearly all of the processing happens on the client, and client accesses the database directly rather than through any middleware. In this model, all of the presentation logic and the business logic are implemented as processes on the client.

Two-tiered architecture is the simplest one to implement. Also, it is the most stable form of Client/Server implementation, making most of the errors that testers find independent of the implementation. Direct access to the database makes it simpler to verify the test results.

The disadvantage of this model is the limit of the scalability and difficulties for maintenance. Because it doesn't partition the application logic very well, changes require reinstallation of the software on all of the client desktops.

2.10.1.2 Three-tier Client/Server

A three-tiered architecture builds on the traditional two-tier approach. The first tier is the clients, the second tier is the web server and the three tiers consists of applications and their associated databases that supply non-HTML information to the web server or requests.

From the software perspective, the application is divided into a presentation tier, a middle tier, and a data tier. The middle tier is composed of one or more application servers distributed across one or more physical machines. The data tier provides comprehensives data services, including database operations supported by databases software, enterprise resources planning software services and other services needed to support a robust electronic commerce server.

This model is very complicated for testing because the business and/or data objects can be invoked from many clients, and the objects can be partitioned across many servers. The characteristics make the 3-tiered architecture desirable as a development and implementation framework at the same time make testing more complicated and tricky. (<http://www.corba.ch/e/3tier.html>)

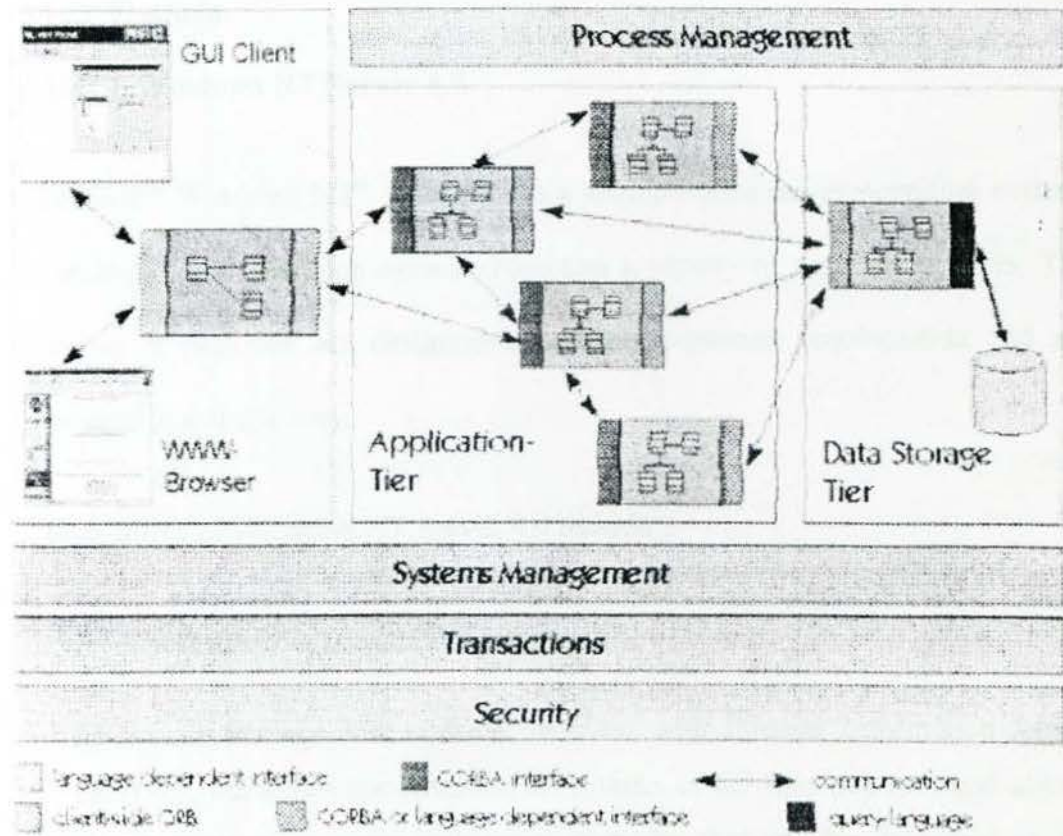


Figure 2.8: 3 tier Client Server Architecture

2.10.1.3 N-tier Architecture

Essentially, like 3-tier and theoretically the best of it for the whole world. The model gets serious about implementing what looks like a 3-tier model logically. But instead breaks the components down to their smallest reasonable logical unit of work. If the data services layer is done properly, even the database can be spread across multiple services and move around as needed. The only impact is on the data services components that provide information to the move data. The business services components are oblivious to the move, since they only need to know the name of the data services component that supplies the data and what specific method to call. (Post, V.P, 1999)

2.10.2 Platform

2.10.2.1 Windows NT Server 4.0

Microsoft® Windows NT® Server 4.0 is a multipurpose server operating system. A multipurpose operating system integrates a variety of network services. The services it provides are designed to address customer requirements and are managed in a single way.

The features of Windows NT Server 4.0 include:

- **Microsoft Management Console**

Microsoft Management console, released with Internet Information Server (IIS) 4.0, combines the administration tasks of IIS into one tool and allows administrators to create task-based consoles that can be delegated to the appropriate administrator.

✧ Administrative Wizards

Administrative wizards group the common server management tools into a single place and walk you through the steps required for each task.

✧ Network Monitor

A network diagnostic tool, the Network Monitor examines network traffic to and from the server at the packet-level. It can capture network traffic so you can analyze it later.

✧ System Policy Editor and User Profiles

These two features allow users to manage and maintain users' desktops. They can use system policies to standardize desktop configurations, enforce behavior and control the user work environment and actions.

User profiles contain all user-definable settings for the work environment of a computer running Windows NT. You can store both policies and profiles on a network server, a management feature that always gives users the same desktop regardless of where they log onto the network.

✧ Task Manager

Task Manager reports key performance metrics of the Windows NT-based system. It provides detailed information on each application and process running on the workstation in addition to memory and CPU usage.

✧ DNS Server

A version of DNS service, the DNS Server includes a graphical administration utility and integrates with WINS services for dynamic updates of host names and addresses. Through the WINS/DNS integration, an end user can use DNS "compound" names to access a network resource. For example, using the Windows NT Explorer it is possible to access a share through a DNS name such as \\srv1.myco.com\public. (<http://www.microsoft.com/ntserver/ProductInfo/features/Features.asp>)

2.10.2.2 Linux

Linux is a free; UNIX work-alike designed for Intel processors on PC architecture machines. Linux is not UNIX, as UNIX is a copyrighted piece of software that demands license fees when any part of its source code is used. Linux was written from scratch to avoid license fees entirely, although the operation of the Linux operating system is based entirely on UNIX and it shares UNIX's command set.

Linux supports a wide range of software, from TeX (a text formatting language) to X (a graphical user interface) to the GNU C/C++ compilers to TCP/IP networking. It is well suited to function as a development environment for web applications. Its superior stability is a feature that cannot be beaten even by Windows. Linux is capable of running 24 hours 7 days a week without system failures or crashes. Memory management is dynamic and used memory is released after a particular application ends unlike Windows.

In addition Linux has the following features:

- ✦ It is capable of multitasking.
- ✦ Has support for Netware clients and servers.
- ✦ Includes a LAN Manager/Windows Native (SMB) client and server.
- ✦ It is multi platform (can run on any processor).
- ✦ Many networking protocols supported.
- ✦ Has memory protection between processes ensuring that a program cannot crash the entire system.

Linux's only weakness is a lack of support for hardware making it a little difficult to setup a machine with Linux.

2.10.2.3 Unix (Sun Solaris 7)

UNIX is one of the popular operating systems worldwide because of its large support base and distribution. It was originally developed as a multitasking system for minicomputers and mainframes in the mid-1970s, but it has since grown to become one of the most widely used operating systems anywhere. Anyway, it sometimes has confusing interface and lack of central standardization. UNIX is a multitasking, multi-user operating system. This means that there can be many people using one computer at the same time, running many different applications. (This differs from MS-DOS, where only one person can use the system at anyone time.)

Under UNIX, for users to identify themselves to the system, they must log in, which entails two steps: Entering user's login name (the name by which the system identifies you), and entering his/her password, which is the user personal secret key to logging in to his/her account. No one else can log in to the system under his/her username without knowing the password.

In addition, each UNIX system has a hostname assigned to it. The hostname is used to identify individual machines on a network, but even if the machine isn't networked, it should have a hostname.

2.10.3 Technologies

2.10.3.1 Active Server Pages (ASP)

Active Server Pages (ASP) is a server-side scripting environment for creating and run dynamic, interactive, high-performance Web server applications. ASP is a Microsoft technology that allows for the programmatic construction of HTML pages just before they are delivered to the browser.

With ASP scripting, the user can use any scripting language for which he/she provides the appropriate scripting engine. ASP supplies scripting engines for Microsoft Visual Basic Scripting Edition (VBScript) and JavaScript.

It works by allowing the developer the functionality of a programming language. In other words, the developer able to write programming code that will generate the HTML for the web page dynamically. So, whenever a user browsers to the web site and requests one of the web site's ASP pages, the ASP code is processed at that time by a web server. This processing generates the HTML, which is subsequently passed to the browser and used to create the page itself, on the user's screen. ASP-generated content is compatible with standard Web browsers.

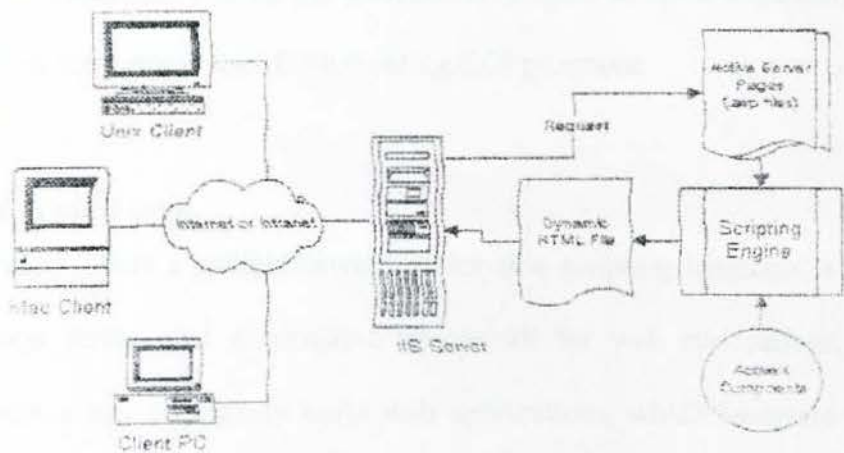


Figure 2.9: How Active Server Processes ASP Files

Active Server Pages are Microsoft’s solution to creating dynamic Web pages. It contains two parts: programmatic code and embedded HTML. The programmatic code can be written in a number of scripting languages. (Scott Mitchell & James Atkinson, 2000)

2.10.3.2 Common Gateway Interface (CGI)

The Common Gateway Interface (CGI) is a standard for interfacing external applications with information servers, such as HTTP or Web servers. A plain HTML document that the Web daemon retrieves is static, which means it exists in a constant state: a text file that doesn't change. A CGI program, on the other hand, is executed in real-time, so that it can output dynamic information.

Since a CGI program is executable, it is basically the equivalent of letting the world run a program on your system, which isn't the safest thing to do. Therefore, there are some security precautions that need to be implemented when it comes to using CGI programs. Probably the one that will affect the typical Web user the most is the fact that CGI programs need to reside in a special directory, so that the Web server knows to execute the program rather than just display it to the browser. This directory is usually under direct control of the Webmaster, prohibiting the average user from creating CGI programs.

2.10.3.3 Cold Fusion

Cold Fusion offers a straightforward server-side scripting language, a powerful application server, and a complete framework for web applications. It gives developers a way to quickly build web applications, which integrate with key server technologies such as relational databases and SMTP e-mail.

Cold Fusion enables servers to access data as the server builds an HTML page. Cold Fusion utilizes a proprietary set of tags to encapsulate functionality, which are processed by the Cold Fusion Server software. This server software can run on multiple platforms, including Netscape Enterprise server, Unix/ Apache and US. Cold Fusion pages are readable by any browser.

Chapter 3

Methodology

Chapter 3: Methodology

3.1 Waterfall Model

The stages for waterfall model are depicted as cascading from one to another. As the figure implies, one development stage should be completed before the next begins. Thus, when all of the requirements are elicited from the customer, analyzed for completeness and consistency, and documented in a requirements document, then the development team can go on to the system design activities. The waterfall model presents a very high level of what goes on during development, and it suggest to developers the sequence of events they should expect to encounter.

The waterfall model has been used to prescribe software development activities in a variety of context. For example, it was the basic for software development deliverables in U.S Department of Defense contracts for many years, defined in Department of Defense Standard 2167-A. Associated with each process activities is milestones and deliverables, so that the project managers could use the model to gauge how close the project was to completion at a given point in a time.

The waterfall model can be very useful in helping developers lay out what they need to do. Its simplicity makes it easy to explain to customers who are not familiar with software development; it make explicit which intermediate products are necessary in order to begin the next stage of development. Many other, more complex models are really just embellishment of the waterfall, incorporating feedback loops and extra activities. (Shari Lawrence Pfleeger, 2001)

3.1.1 Disadvantages of Waterfall Model

The biggest problem with the waterfall model is that it does not reflect the way code is really developed. Except for very well understood problems, software is usually developed with a great deal of iteration. Often, software is used in a solution to a problem that has never before been solved or whose solution must be upgraded to reflect some changes in business climate or operating environment

Main disadvantages of Waterfall Model:

- It implies that any stage should be frozen before continuing with the later stages (resulting in premature requirements, design, coding, etc.)
- It assumes that user requirements can be precisely specified. Unfortunately customers rarely know precisely what they want, and software engineers rarely understand the business context of their customers.
- It requires the customer to be extremely patient, as he/she has no way of assessing how far the development process has got until he sees the nearly finished product.
- It is still unrealistic. In many software projects strict sequencing of phases is not actually obeyed. For example, related activities such as coding can take place during the design phase or integration testing. Milestone dates seem to be somewhat arbitrary, and a significant part of the activities cross stage boundaries.

(Dr. P. Sellapan, 2000)

3.1.2 Why not use Waterfall model?

The waterfall model is useful for this project, which it presents a very high view of development. But it does not reflect the way code is really developed. Except for very well understood problems, a system is usually developed with a great idea of iteration.

3.2 Prototyping Model

The prototyping model allows all or part of a system to be constructed quickly to understand or classify issue, it has the same objectives as an engineering prototype, where requirements or design require repeated investigation to ensure that the developer, user and customer have a common understanding both of what is needed and what is proposed. One or more of the loops for prototyping requirements, design or the system may be eliminated, depending on the goals of the prototyping. However, the overall goal remains the same, reducing risk and uncertainty in development. (Shari Lawrence Pfleeger, 2001)

3.2.1 Disadvantage of Prototyping Model

Prototyping model can help to develop a system instantly, but the platform or program used to develop the system may be not suitable. The system developed by using the prototyping model may face the maintenance problem for future enhancement.

- Sometimes the cost of prototype development represents an unacceptable large fraction of total cost
- System are usually poorly structured. Continual change tends to corrupt the software structure. Maintenance is therefore likely to be difficult and costly.

3.2.2 Why not use the prototyping model?

The duration given to complete the project is enough. It is better to follow the normal development stage to complete the project by step to step.

3.3 Phased Development: Increments and Iterations

The phased development is used to reduce the cycle time. Cycle time include the time the requirements documents were written and the time that the system was delivered.

The system is designed so that it can be delivered in pieces, enabling the users to have some functionality while the rest is being developed.

Thus, there are usually two systems functioning in parallel: the production system and the development system. The production system is the one currently been used by the customer and user; the development system is the next version that is being prepared to replace the current production system.

The most popular approaches to decide how to organize development into releases are incremental development and iterative development. In increments development, the system as specified in the requirement documents is partitioned into subsystems by functionality. The releases are defined by beginning with the small one, functional subsystem and then adding functionality with each new release.

However, iterative development delivers a full system at the very beginning and then changes the functionality of each subsystem with each new release.

3.3.1 Disadvantage of Phased development

Problems may be occurring during the final stage to combine all the subsystem to form the system. The subsystem may need to modify again to solve the problems.

3.4 Waterfall with prototyping model

The combination of waterfall model and prototyping model provide a better solution for the problems that occurs on their own. This model makes the development phase more visible. A system prototype can be developed to give end users a concrete impression of the system capabilities. The prototype may therefore help in establishing and validating system requirements.

A prototype is partially developed product that enables customers and developers to examine some aspect of the proposed system and decide if it is suitable or appropriate for the finished product. (Shari Lawrence Pfleeger, 2001)

The waterfall with prototyping model enabled the validation and verification.

Validation will ensures that the system has implemented all the requirements, so that each system function can be tracked back to a particular requirement in the specification.

Validation will be important for the backend system because if the backend system builds not accordingly to the specification or objective, the most properly the front-end system will be corrupted too. Whereas verification will ensures that each function works correctly. It is needed in order to get the high quality of the implementation on the system.

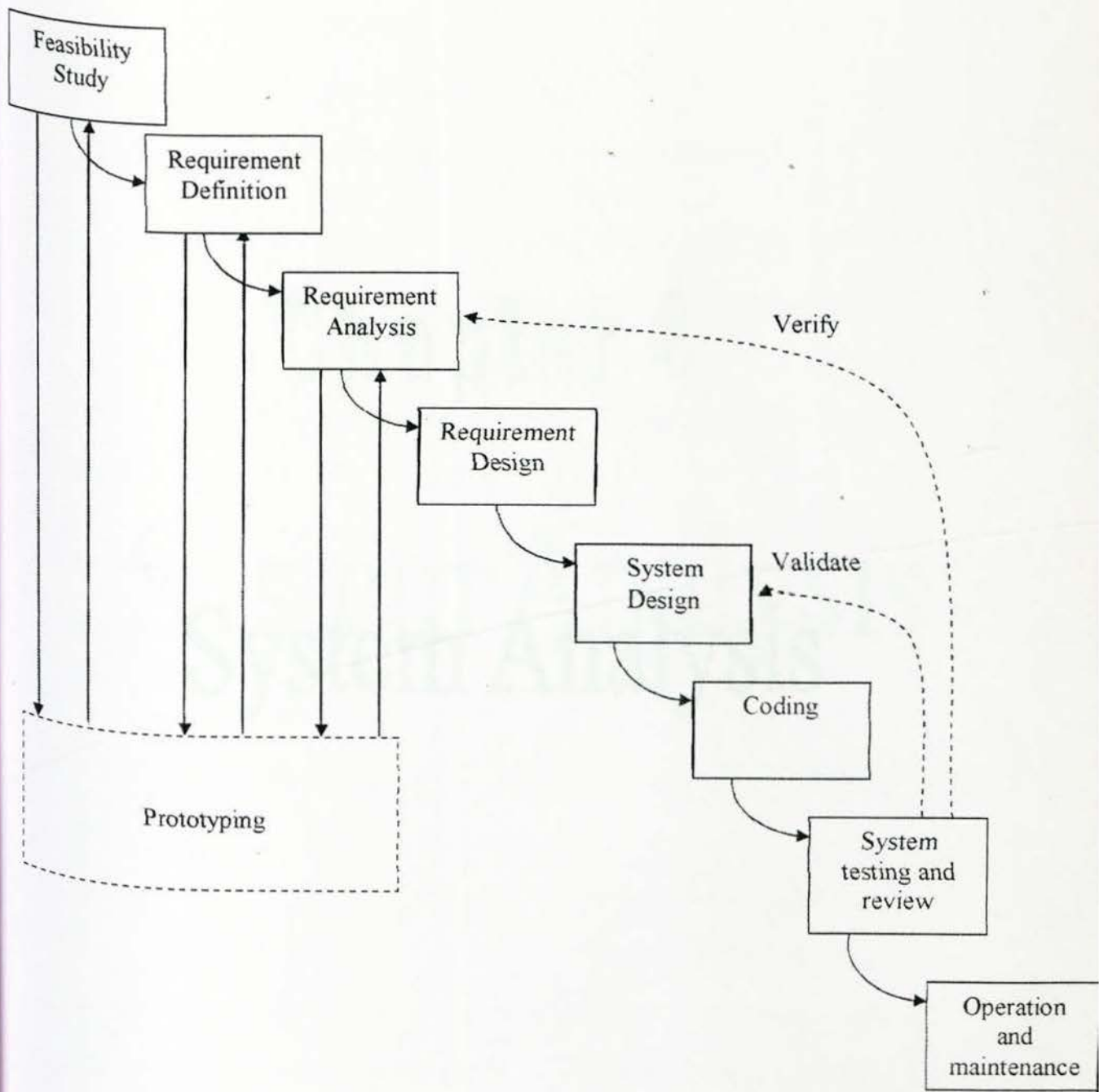


Figure 3.1: The waterfall with prototyping

Chapter 4

System Analysis

Chapter 4: System analysis

4.1 Consideration of software and technologies

4.1.1 Consideration of operating system – Windows NT Server 4.0

Microsoft Windows NT Server 4.0 is chosen as the platform to develop the ETIS backend system because it is a multipurpose server operating system. A multipurpose operating system incorporates a variety of network services. The services it provides are designed to address customer requirements and are managed in a single way.

The combination of Windows NT Server 4.0 and its built-in Web server, Microsoft Internet Information Server 4.0 (IIS), delivers up to 52 percent better Web server performance with Active Server Pages (Microsoft test results).

Windows NT Server 4.0 create professional-quality Web pages and publish entire sites, without knowing any HTML, by using wizards and templates. It publishes information to the Web using a Web browser, the Web publishing wizard, or FTP. It can also share files and data on Windows NT, Novell NetWare and UNIX servers, and more than 55 databases, including Microsoft SQL Server, Oracle, and Sybase databases. Windows NT Server 4.0 also consist the searching function for content in HTML and Microsoft Office document types, and multiple languages.

Windows NT Server 4.0 able to protect applications and Web sites against failure from misbehaving components or Web applications on the server, by running them in separate memory spaces, a feature known as process isolation.

3. SQL Server rapidly builds, deploys, and manages e-commerce, line-of-business, and data warehousing solutions. It performs sophisticated data mining on customer and financial data. It also reduce development time with the integrated T-SQL debugger, and develop user's own functions that can be reused in different applications. SQL Server 2000 provides the fastest route to Web application development.

4.1.4 Consideration of Web Technologies – Active Server Pages (ASP)

ASP was chosen to develop the EasyTrip Travel Information System because it comes free with Windows NT 4 Option Pack 4. Further more, ASP provides confidentiality for the specific codes for users of the Internet, as the code written in ASP will be only displayed as pure HTML when viewed using an Internet Browser. The display of pure HTML as an output is benefit by itself as it makes output from ASP compatible to all browser.

Besides that, the ASP pages are more easily develop compared to the PHP. PHP is using the syntax of C and Perl to program while ASP is written by using scripting language, such as VBScript and Jscript that are easier to learn and contribute to the dynamic feature of ASP. Even a person without the programming knowledge can build ASP pages.

4.1.5 Consideration of server side scripting language – VBScript

VBScript has been chosen as the server side scripting language in implementing the EasyTrip Travel Information System. It is due to the reason that ASP was chosen as the technology to develop the system. Many books and resources are giving the sample of code in VBScript while coding with ASP.

As the server process the coding of ASP, the usage of VBScript or any other type of scripting language had no effect whatsoever on the outcome displayed in web browser. It is because the HTML source code is produced for the processing of ASP pages. HTML pages will be supporting by all major browsers. Due to the preceding two facts, VBScript was chosen as the server side scripting language for the choice of EasyTrip Travel Information System

4.1.6 Consideration of web browser – Internet Explorer 4.0 and above & Netscape Navigator 4.0 and above

Microsoft Internet Explorer 4.0 or above and Netscape Navigator 4.0 or above is considered as they are the major browser in nowadays.

4.1.7 Consideration of database security technology – public key cryptography technology

The Public key cryptography technology is used to maintain the confidential of the record in the database. Public Key system have an enormous advantages over the confidential key system because anyone can send a message to a user, while the

message remains adequately protected from being read by an interceptor. With the conventional key system, a separate key is needed for each pair of users in order to read the message. (Pleefger, C.P., 1997)

With the Public Key or asymmetric encryption system, each administrator and user has 2 keys, a public key and a private key. That is the administrator and the user can decode with a private key what user can encrypt with the corresponding public key. The other reason I choose Public Key cryptography technology instead of other technology is because it is easier to develop compare to others. Besides that I notice that other protocols that provide transaction security include public key cryptography technology as one of their main component. For example, like Secure Socket Layer (SSL) uses public key technology and digital certificate to authenticate the server in a transaction and to protect information as it passes from a party to another over the Internet. (Deitel, Deilel & Neito, 2000)

4.2 Functional and Nonfunctional Requirements

Requirements describe a system behavior. The requirements express the system and object states and the transition from one to another. In particular, the requirements describe the system before and after the activity occurs. (Shari Lawrence Pfleeger, 2001)

Functional requirement describe an interaction between the system and its environment. Functional requirements describe how the EasyTrip Travel Information System should behave in a particular situation. There are several functional requirements for EasyTrip Travel Information System backend processing and database. Backend processing for EasyTrip Travel Information System is divided into 7 modules:

1. Member registration and sign in module
2. Accommodations reservation module
3. E-partner module
4. Administrator management module
5. Report module
6. Newsletter generating module
7. Help system module

4.2.1 Functional requirement for backend processing

4.2.1.1 New member registration and sign in module

The Internet users need to register as a member before they can make any online transaction with the system. Member can enjoy the extra benefits and the special promotion packages. They can also receive the newsletter about the latest promotion or special deals from EasyTrip Travel Information System. The registration procedure needs the user to assign own member ID and password. The

member ID will be as primary key and foreign key for the backend processing. It will also verify the member status and connected to another tables in the database.

Functional requirements:

i. New member registration

Internet users can register as a member of the site by fill in an online form. They must submit personal particulars and member ID and 8-character password.

The password will be encrypted before store into the database.

ii. Existing member sign in

Existing member can type their member ID and password to access to their own account and continue their activities.

iii. Member's account review

Member can log on to their account and view their previous activities via their own account. This module will retrieve the data from database using member ID and display the entire necessary field for member view.

iv. Update record

Member can also update their personal details whenever they wish to. New record will replace the existing records in the database.

v. Change password

Member can change their password to restrict the account security. The new password will also been encrypt before store into the database.

vi. Membership cancellation

Members can choose to cancel their account when they wish to do so. The member's details will be deleted from the database.

New member registration and sign in module will have the following error management to make sure the inputs from the user are correct and the module will function properly.

- a. The system will make sure that the member ID is unique for every member and any repeated member ID during the registration will be prompt out the error message and require the user to reenter the member ID.
- b. The password field need user to key in 8 characters. Error message will be prompt out if the user inserts more/ less characters.
- c. The email address field will make sure the user enter the valid email address. If user failed to do so, user will be notified to reenter the email address before they can proceed to another stage. This is important to make sure the valid email address for the future transaction or contact.
- d. The user entered password and reenter password will be validate by comparing the 2 inputs. This step will make sure that the user enters the password correctly.

4.2.1.2 Accommodations reservation module

The accommodations reservation module will allow the user to make reservation online. They can view all the hotels list and ranking information before making the reservation.

Based on the review from the current online reservation system, there are 3 types of approach that can be used to implement the online reservation system.

Approach 1:

The online reservation system will be connected directly to the related accommodations database. This will enable the reservation procedure been done and the confirmation for the reservation will be given instantly. The data of the

accommodations database will be update immediately after every reservation. This is the most effective way to make the online reservation.

Problem:

This approach is not practical for EasyTrip Travel Information System. There are a number of hotels involved in our system. Furthermore, most of the hotels will not allowed other systems to connect to their backend system straightforwardly due to the privacy and confidential of the business management.

Approach 2:

Each hotelier will be given an account. They can update their rooms' status through the system backend processing. All the rooms' status information will be kept in database. When a member makes a room reservation, the system will go through the rooms' status to verify whether there is any room available.

Problem:

This approach is not practical for EasyTrip Travel Information System the numbers of involving hotels are too many and it will need a lot of memories and technical to support this approach. Due to the server and technical limitation, this approach cannot be practice in EasyTrip Travel Information System.

Approach 3:

Members are required to fill in an electronic form for the particulars, the check in and check out date, the number of room needed and the type of room preferred. This information will be sent to the hotelier to get the verification from the related hotel. Members will be given a confirmation about the reservation if it proceeds successfully. If the reservation is failed, the member will be provide a notification and the system will suggest the other hotels for them. They can make other reservation due to the hotels suggested or hotels on their preference. They can cancel the reservation before the check in date if they want.

Problem:

Members cannot get the instant confirmation for the reservation. The system has to wait the reply from the hotel to verify the member's reservation.

After analysis the three approach and due to the system limitation, I have chosen the third approach for our accommodation reservation module. It is the most practical method for EasyTrip Travel Information System

4.2.1.3 E-partner module

All the local hotelier, car rental company and restaurant can corporate with our travel agency to promote their service or food through our web site or the newsletter. In order to be our e-partner, they have to register through the electronic form. They are required to submit their own partner ID and password. The partner ID will be used as the primary key to identify the partner. They are required to submit their company information or their company logo/ pictures to build their own pages. They can update or edit their information anytime by logon to their own account and EasyTrip Travel Information System management team will keep track the latest information.

Functional requirements:

i. New e-partner registration

The user can register as our e-partner by simply fill in the electronic form with their details. They need to submit their own partner ID and password.

ii. Existing e-Partner sign in

Existing member can log in to their account by enter their partner ID and password. All partners have to sign in before they can proceed to the other steps to update or edit their account information.

iii. Submit company information

E-partners are required to submit their company information in order to build up their home page. They can submit the company logos or related pictures by attached it to the form.

iv. Update company information

E-partner can update their information from time to time. The new information will replace the existing information in the database and the homepage for the e-partner will also been updated immediately after the changes.

v. Change password

E-partner can change their password if they want. The new password will replace the existing password and it will be encrypt before storing into the database.

vi. Partnership cancellation

E-partner also can cancel their membership whenever they wish to do it.

E-partner module will have the following error management to make sure the inputs from the e-partner are correct and their information will be store security in the database.

- a. The system will make sure that the partner ID is unique for every partner and any repeated partner ID during the e-partner registration will prompt out the error message and require the user to reenter the partner ID.
- b. The password field need user to key in 8 characters. Error message will be prompt out if the user inserts more/ less characters.

- c. The user entered password and reenter password will be validate by comparing the 2 inputs. This step will make sure that the user enters the password correctly.

4.2.1.4 Administrator management module

Administrator management module helps the administrators to manage the site and updates the information from time to time. They can add, edit, update and delete the records in the database.

Functional Requirements:

- i. Administrator login

The administrator team will be provided the loginID and password to log on to the administrator management module to precede the next activities.

- ii. Change password

Administrator allowed changing their password from time to time for the security reason.

- iii. Add record

Administrator can add new record to the database. The new record might be the schedule for the transportation, latest tour package or any new services.

Administrator also can help the e-partner to add record if they need it.

- iv. Edit record

Administrator can update or edit the records in the database. The record for e-partner also can be updated.

- v. Delete record

Administrator also can delete the records in the database. This includes the record for the transportation, membership or e-partner membership.

vi. Generate member list for newsletter

The system will help the administrator to generate the mailing list for the member that will need the newsletter.

4.2.1.5 Report generating module

This module can help the EasyTrip Travel Information System management team to generate the reports for the site activities. This module consists report generating for usage tracking, list for tour packages, members details, e-partners' details and visitors' feedback. The reports are important for analysis.

Functional requirements:

- i. Administrator can choose to generate the report by select the related link.
- ii. They can choose the field they interest with for the report.
- iii. They can also print out the report.

4.2.1.6 Newsletters generating module

This module use to generate the newsletters that provide the latest traveling information for our members. Administrator will generate the newsletter to the member according to the member list that wish to receive the newsletter.

4.2.2 Nonfunctional requirements for ETIS backend system

Nonfunctional requirements describe a restriction on the system that limits the choices for constructing a solution to the problem. Nonfunctional requirements are those requirements that are not directly needed by the business but are nevertheless important. They represent constraints placed on the system. These include performance, security and usability. It also includes constraints placed on the system such as what hardware and/or software the system must use. (Dr. P. Sellapan, 2000)

1. User friendly of the system design and interface design

The design and the interface of the system must be user friendly. This will help the users use the system easily without facing any problems.

- a. The interface design must consistent, for instance the position for the button must be consistent. So those users need not to find the new location of the button for every page.
- b. Appropriate error handling with associated error message displayed.
- c. The instructions must be clear and easy to follow.

2. Web site security

Security is an important issue of system design. The system should able to authenticate and authorize the valid user for the system. The protection of assets from unauthorized access, use, alteration or destruction is needed for a system. (Gary P. Schneider And James T. Perry, 2000)

3. Download time and response time

The download time and response time for a page must be fast enough. Each page should be able to display all its contents within 10 seconds to 15 seconds, if it were considered acceptable by American standards. The web page design should try to fix this download limit. Unnecessary interaction between the server and the client will increase the response time. In order to get the backend processing able to react fast and respond immediately, some of the input validation done on the client side by using the client side scripting language.

4. System reliability

System reliability is the probability that a system will operate without failure under given conditions for a given time interval. (Shari Lawrence Pfleeger, 2001) The failure of the system should not produce costly failure and should be recovered in 24 hours.

5. Inter operability

Applications and computers from different suppliers will have the capability to work together on a network and to connect to each other, share data and process as appropriate.

4.3 Run Time Requirement

4.3.1 Server Hardware Requirements

Server computer requirements are:

- ✦ A server with at least Pentium 166 MHz MX processor
- ✦ At least 64 MB RAM
- ✦ Network Interface Card (NIC) and network connection with recommended bandwidth with 10 Mbps
- ✦ Others standard computer peripherals

4.3.2 Server Software Requirements

- ✦ Microsoft Windows NT Server 4.0
- ✦ Microsoft Internet Information Server 4.0
- ✦ Microsoft SQL Server 7.0

4.3.3 Client Hardware Requirements

- ✦ Any compatible personal computer with recommended at least Pentium MMX processor and 32 MB RAM.

4.3.4 Client Software Requirements

- ✦ Browser – Internet Explorer 4.0 and above, Netscape Navigator 4.0 and above

Chapter 5

System Design

Chapter 5: System Design

The quality of a software product derives from the quality of its design. This bestows particular importance of the design phase in the software life cycle. The purpose of the design is to establish the architecture of a software system with the goal of fulfilling the quality requirements with a cost effective implementation. [Object Oriented and Prototyping In Software Engineering – Gustav Pomberger & Gunther Blashek – Prentice Hall, 1996]

The design phase builds on the knowledge obtained from the analysis phase, it uses the requirements to design a system that will meet the users needs. Design focuses both on the logical and physical or technical aspects of the system. [Psallapan]

The design will include database, function or process, and other dynamic aspects of the system. The EasyTrip Travel Information backend system will include 3 important design stages:

(1) Database Design

The general steps for designing a database:

a. Logical database

It involves identifying the business entities, their attributes and their relationships (cardinality/ optionally). Other business rules, such as validation rules and triggers also can be added.

b. Physical database

It involves identifying the storage media to be used, and specifying the file and record structure, indexing, as well as file access strategies. The Database Management System can perform all those tasks.

(2) Process Design

The process design will includes two important steps:

a. Business processes design

Identify the processes required and determine the structure of these processes.

It also classifies the external entities that supply data to the system (source) and those entities that receive the output or reports from the system (destination). The data flow must be identified and the DFD is used for this purpose.

b. Process logic design

Structured English, Process Specification, Process Dictionary or pseudocode for designing the process logic

(3) Interface Design

Interface design provides the best way for the users to interact with computers. Good interface will improve the productivity, quality of work performed and effectiveness of a system. The ETIS backend system interface design will include the e-partner homepage design, e-partner registration form design and hotel reservation form design.

5.1 **System Structure Chart**

There are two types of approach can be used in the system structure chart design:

✱ Bottom Up design approach

✱ Top Down design approach

The Top Down design approach has been chooses to implement and illustrate the ETIS backend system architecture. This approach make the system structure more visualize. It explodes the system into small part of subsystems.

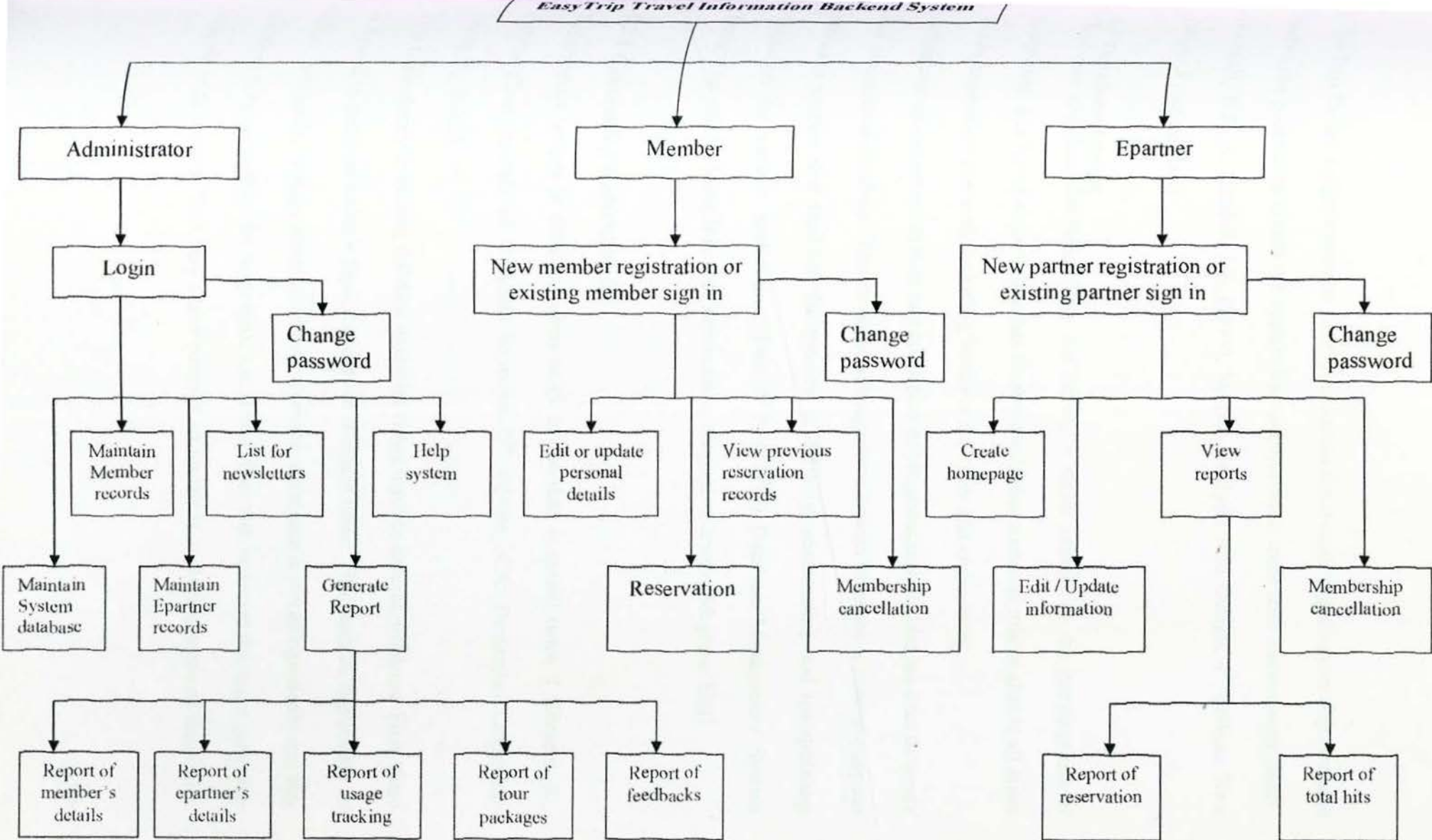


Figure 5.1: Structure Chart For EasyTrip Travel Information System

The Top Down design approach used to ascertain the overall organization objectives; it makes the process to divide the system into subsystem to meet their requirement easily. [Kendall, K.E, & Kendall, J.E, (1999), System Analysis And Design, 4th Edition, New Jersey: Prentice Hall]

5.3 Database Design

Database and database technology are having a major impact on the growing use of computers, it is fair enough to say that database will play a critical role in almost all areas where computers are used, including business activities and engineering.

A database management system is a collection of programs that enables the user to create and maintain a database. The database management system is hence a general-purpose software system that facilitated the process of defining, constructing and manipulating databases for various application. [Post, V.P, (19999) Database Management System Designing and Building Business Application, Singapore: Irwin / Mcgraw- Hill]

5.3.1 Controlling Redundancy

Redundancy occurs in database when much of the data is stored twice. [Elmasni, R., (1994) Fundamentals of Database Systems, 2nd Edition, CA: Penjamin- Cummings Company IMC.]

This redundancy in storing the data multiples times leads to several problems. First, there is a need to perform a single logical update in multiple times. This leads to duplication of effort. Secondly, storage space is wasted when the same data is stored repeatedly and this problem may be serious for large database. Third, files that represent the same data may become inconsistent. This may occur because an update is applied to some of these files

but not to others. For consistency, we should have a database design that stores each login data item in only one place in the database. This does not permit any inconsistency and it saves storage space.

5.3.2 Normalization

The normalization process, as first processes by Codd in 1972, takes a relation schema through a series of test to "certify" whether or not it belongs to a certain normal form. [13]

Normalization of data can be looked on as a process during which unsatisfactory relation schemas are decomposed by breaking up their attributes into smaller relation schemas that process desirable properties. One objective of the original normalization process also minimizes the storage space that using in database and prevents redundancy.

5.3.3 Database Security

Implementing password protection usually restricts access to records stored in a multi-user Database Management System. A potential user must enter a secret password to gain access to the software that displays data on a CRT run a report. This protection might be provided down to the field level, implying that different levels of users could have access to different subset of the database contents. And, separate access limits might be established for examining and exchange data.

To relative importance of security features of Database Management System will depend on the nature of its application. In general, mainframe Database Management System

should have extensive data security and privacy features because they will be applied to a wide range of organization application, some of which are sure to need this problem.

[Database Management – Charles W. McNichols, Sara F. Ruchinek. Prentice Hall Englewood cliffs]

5.4 A Secure Database Development Methodology

Since a database system consists of programs as well as data, a database design methodology is considered to be an integral part of an overall software system methodology.

A good database design methodology should be able to produce a useful database structure within a reasonable amount of time and with a reasonable amount of time and with reasonable amount of effort. A methodology should have enough generality and flexibility to not only be used by persons with different levels of design experience, but also for persons constrained by different data models or database management system software. It should be reproducible so that two persons applying the methodology to the same problem will produce the same or approximately the same result.

There are 4 basic steps in database design:

Step 1: Requirement formulation and analysis

This phase involves the establishment of organizational objectives, derivation of specific database requirements from those objectives or directly from management and non-management personnel, and documentation of those requirements in a form that is agreeable to both end users and database designers.

Among the requirements collected and documented should be information regarding constraints due to security, reliability, technology available, as well as political and bureaucratic constraints.

Step 2: Conceptual Design

The conceptual design phase concerns itself with the description and synthesis of diverse users' information requirements into a preliminary database design.

This phase result in a high-level representation of these requirements such as an entity-relationship diagram.

There are a number of approaches to the formulation of entity-relationship diagrams; the commonality among these approaches is the set of four basic design decision or steps:

1. Selection of entities
2. Selection of entity attributes
3. Identification of key attributes for entities
4. Selection or relationships between entities

Although some commonality exists in these steps to create an information structure, no agreement exists as to the order in which these steps are to be performed. The main point to remember is that the initial information structure should be at least partially process independent to provide a basis for long-term flexibility in the design structure.

Step 3: Implementation Design

The primary objective of the implementation design step is to use the results of the conceptual design phase and the processing requirements (usage perspective) as input to create a DBMS-processing schema as output. Although the placement of the dividing line between conceptual design and implementation design is open to some debate, as is the relationship of logical and physical design.

First, the processing requirements are analyzed for data content. The format of the local information structures for processes is the same as the initial structure produced in step 2. After each process has been represented, the initial structure from conceptual design can be consolidated with all local structures based on processing into a revised information structure.

The logical database structure (schema) thus formed can now be evaluated based on quantitative information and performance measures such as logical record access counts, total bytes transferred to satisfy an application, and total bytes in the database. These measures attempt to predict physical database performance in terms of elapsed time and physical storage space as closely as possible.

Finally, the schema is refined for better efficiency. All refinements are subjected to the same evaluation as the initial schema.

Step 4: Physical Design

The practice of physical database design has advanced through several stages of development from file design of physical database structures for integrated database schemas in the popular DBMSs today.

We can classify the major decision classes of physical design into at least three categories.

1. Stored record format design

This includes all forms of data representation and compression in stored records. It also includes all forms of data representation and impression in stored records. It also includes partitioning of data items in a record to different physical locations, depending on size and usage characteristics.

2. Clustering analysis and design

Clustering involves the placement of record occurrences into contiguous physical extents, allocation across secondary storage devices, and block-size selection for efficient retrieval.

3. Access path design

This encompasses any parameter that has a significant effect on the number or cost of accesses required to retrieve or update data.

5.5 Database design issues

The major issues to be considered in the database design process are integrity, consistency, recovery, security, efficiency, and the effects of projected future growth.

a) Integrity

A database is defined to have the integrity property when it satisfies certain specified data value constraints and preserves this property under all modifications (update, add or delete) of the database.

b) Consistency

A database is consistency when it will respond in the same manner to all multiple users at any instant of time.

c) Recovery

Recovery is the designed capability of the DBMS to restore the integrity of the database following any type of system failure. The recovery design process involves the establishment of adequate check systems to avoid losing transaction and data.

d) Security

Security refers to the protection of data against intentional and unintentional disclosure, modification, or loss. The major objective of database security is to prohibit unauthorized access to data at minimum cost. Therefore, access control is the most important implementation problem.

e) Efficiency

The efficiency aspects of the design of a DBMS-processible logical database structure (schema) are the use of computer resources to execute the database applications and the elapsed execution (or response) time.

[Design of database structures, by Toby J. Teorey and James P. Fry, Prentice Hall, Inc]

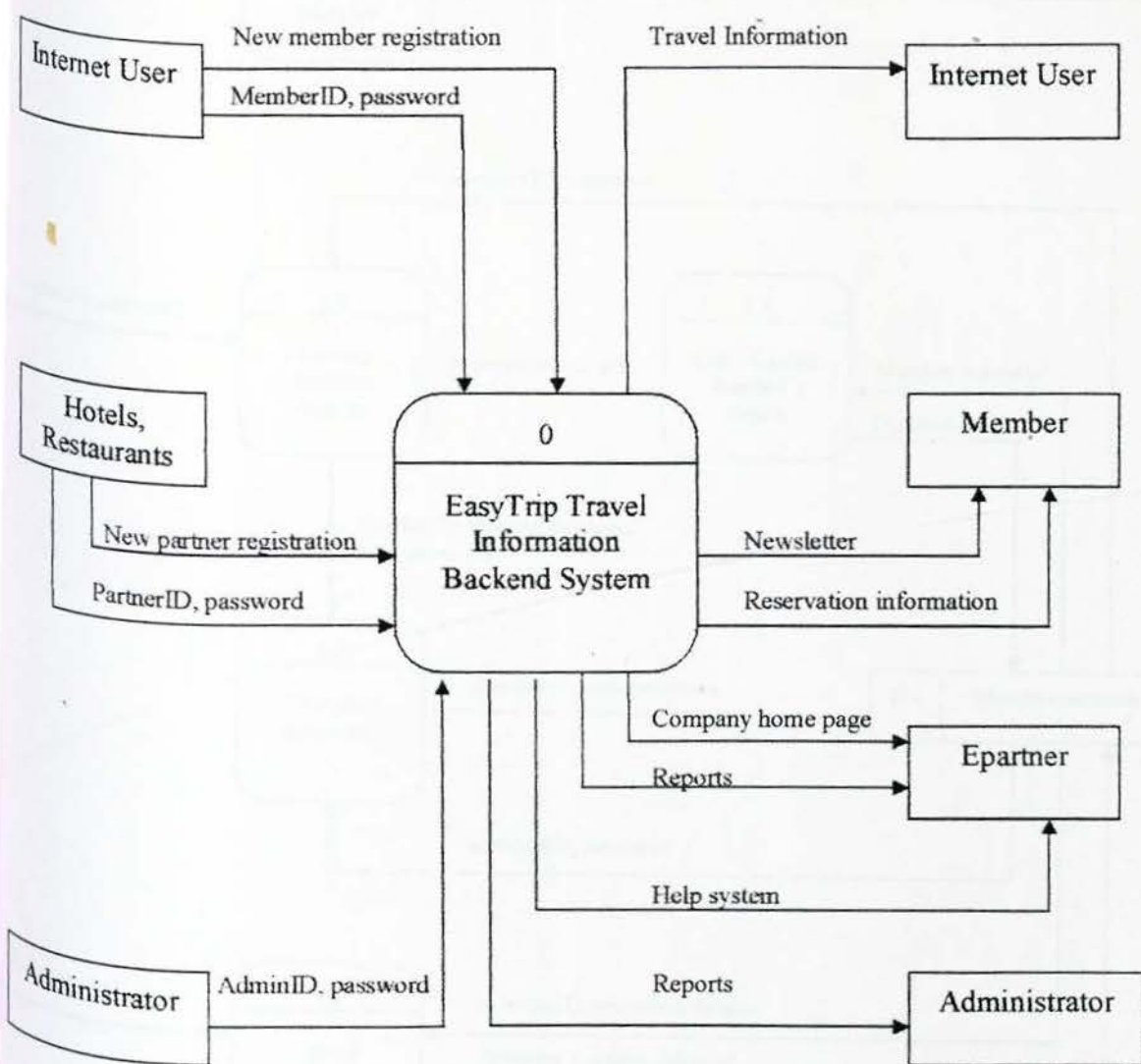


Figure 5.2: Data Flow Diagram- Context Diagram

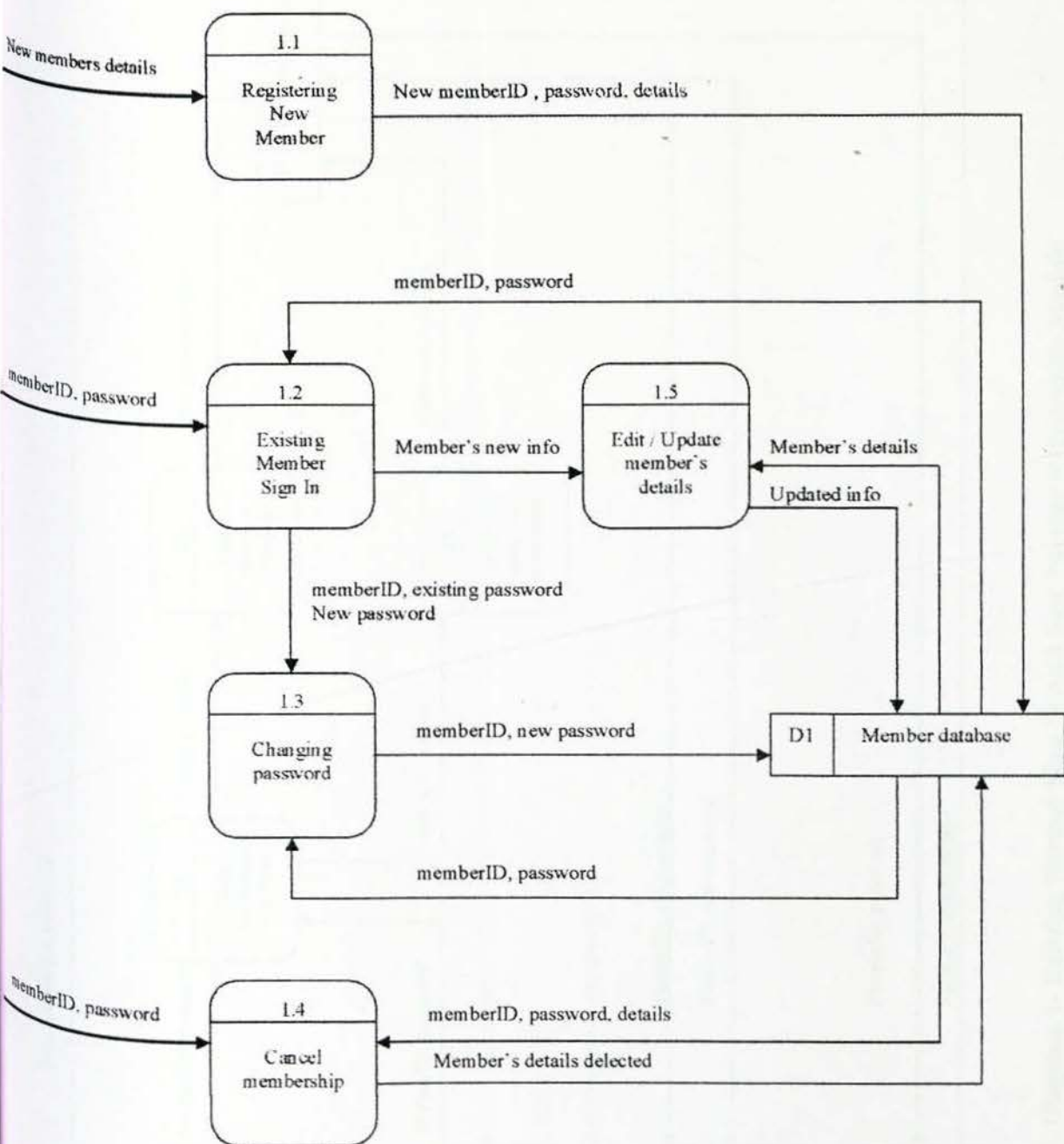


Figure 5.4: Diagram 1- New Member Registration And Existing Member Sign In Module

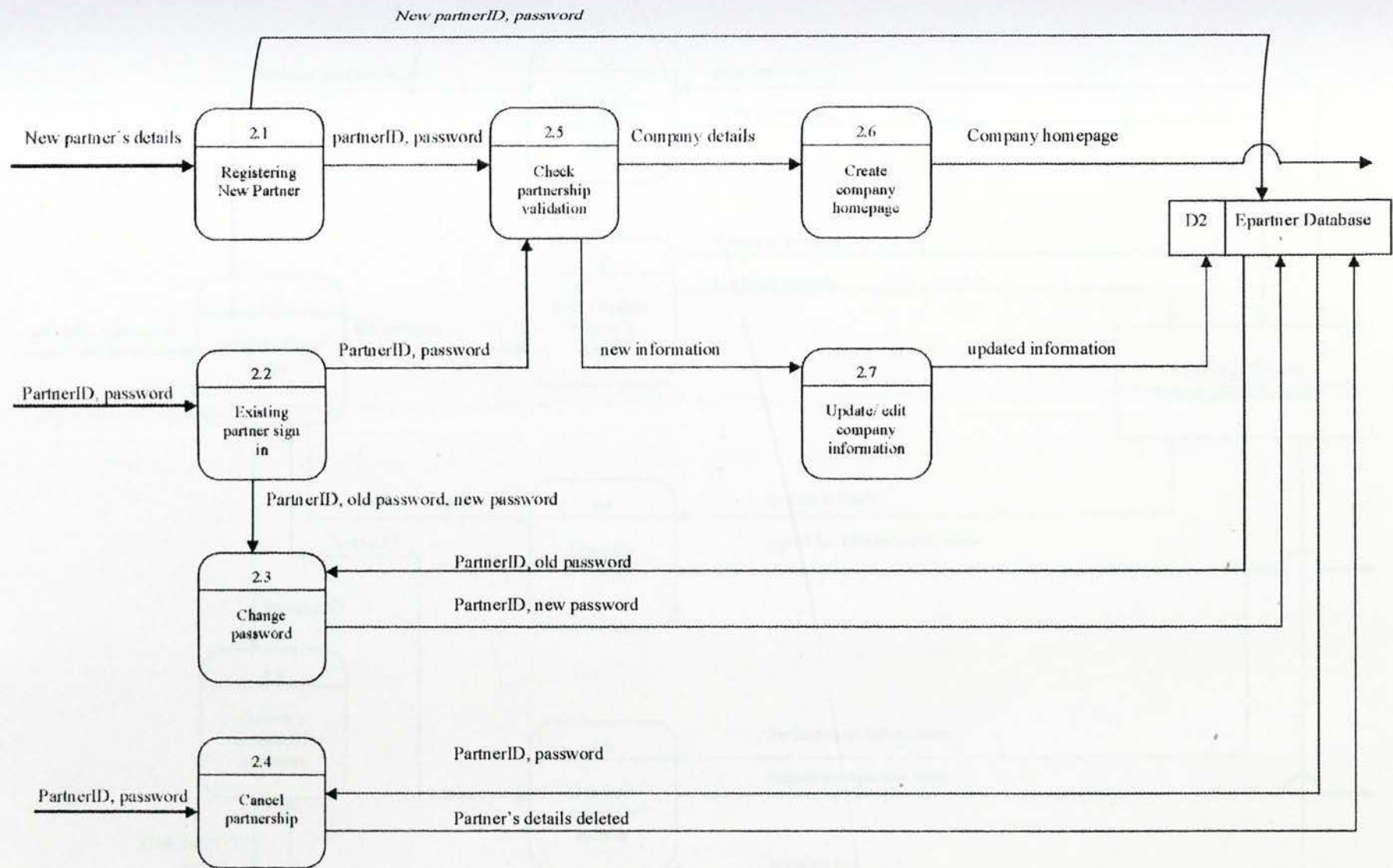


Figure 5.5: Diagram 1- Existing Partner Sign In And New Partner Registration Module

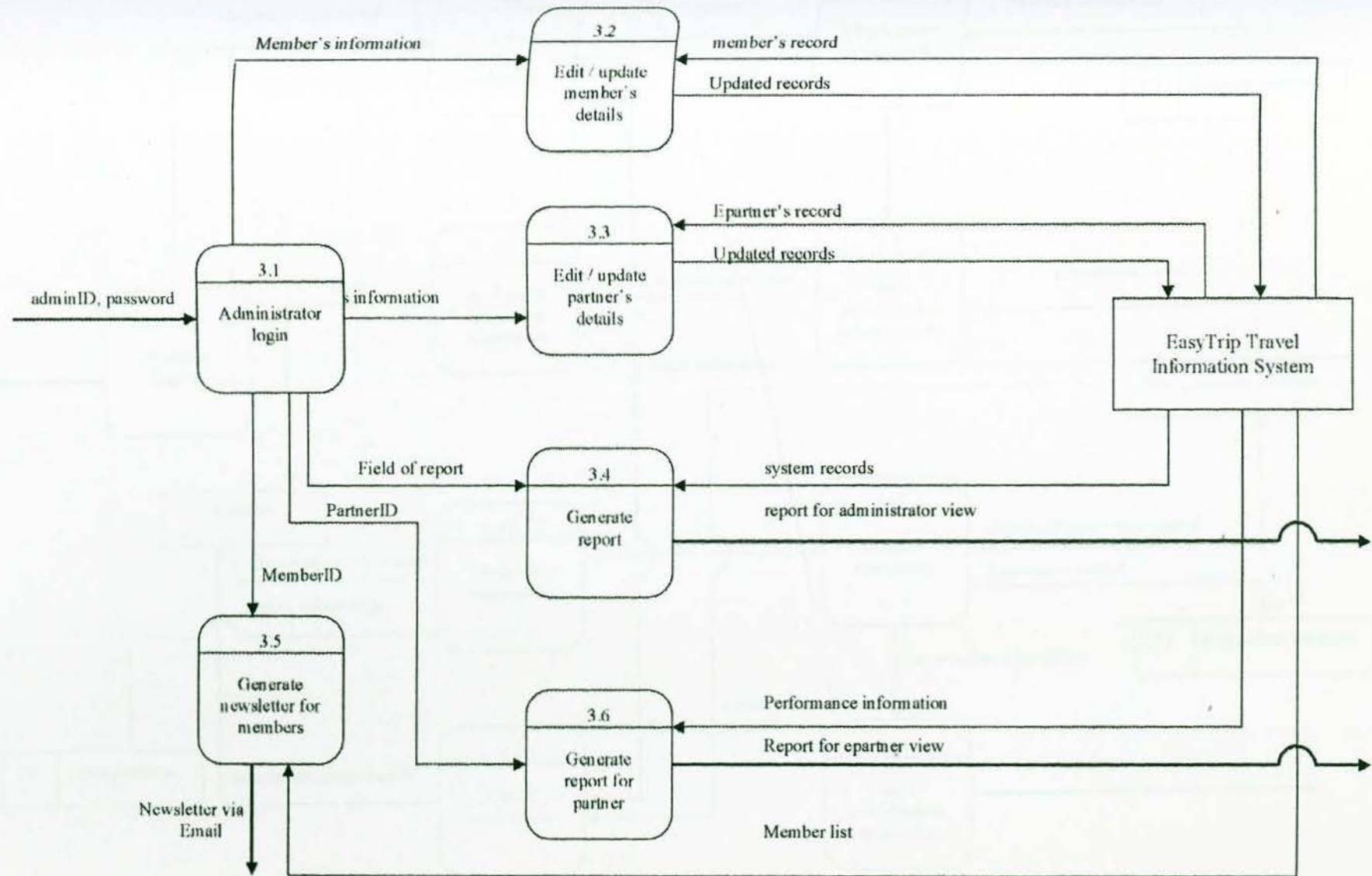


Figure 5.6: Diagram 1- Administrator Module

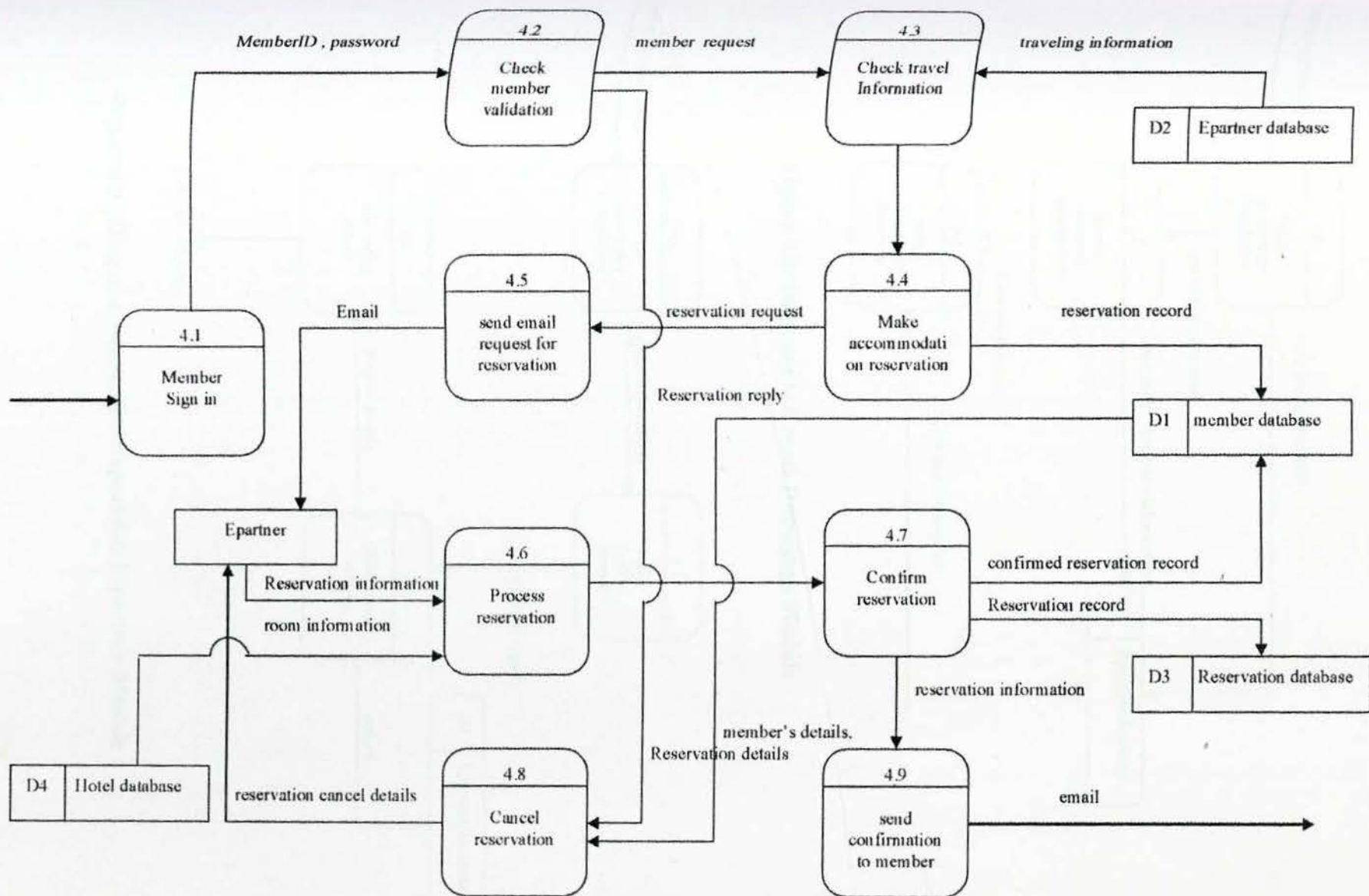


Figure 5.7: Diagram 1- Hotel Reservation Module

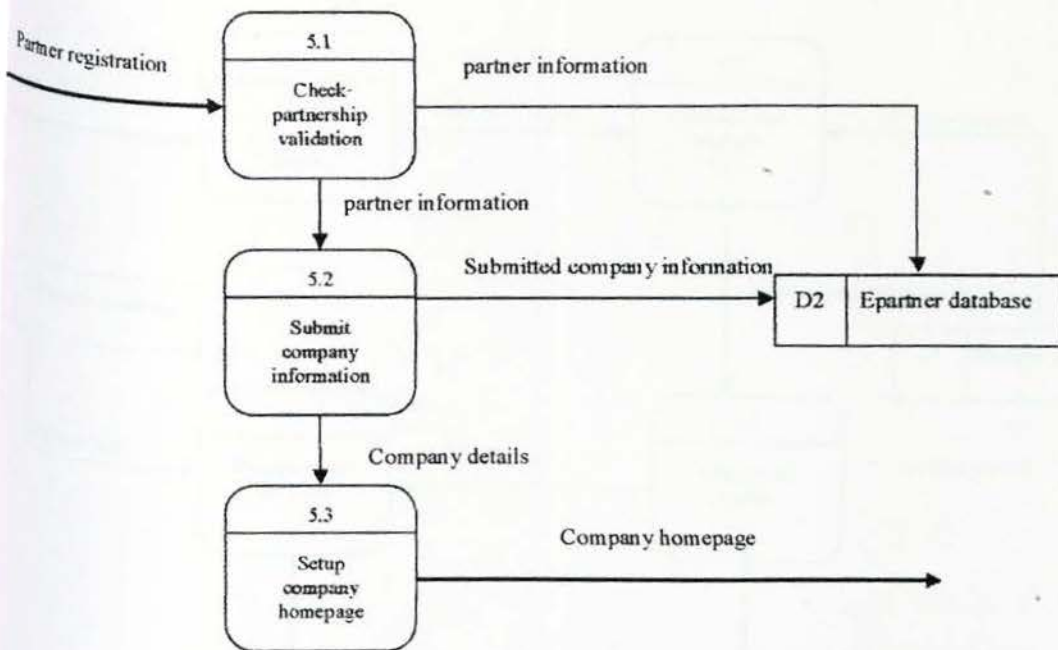


Figure 5.8: Diagram 1- Create Homepage Module

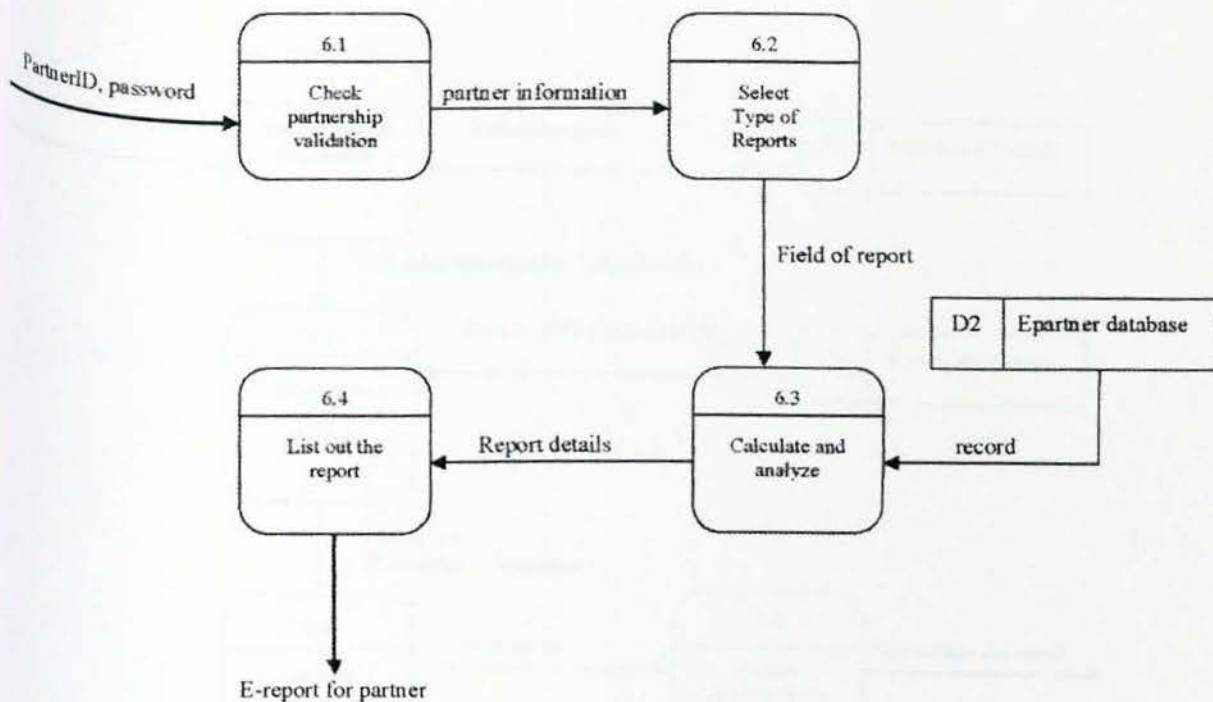


Figure 5.9 : Diagram 1-Generate Report For E-partner Module

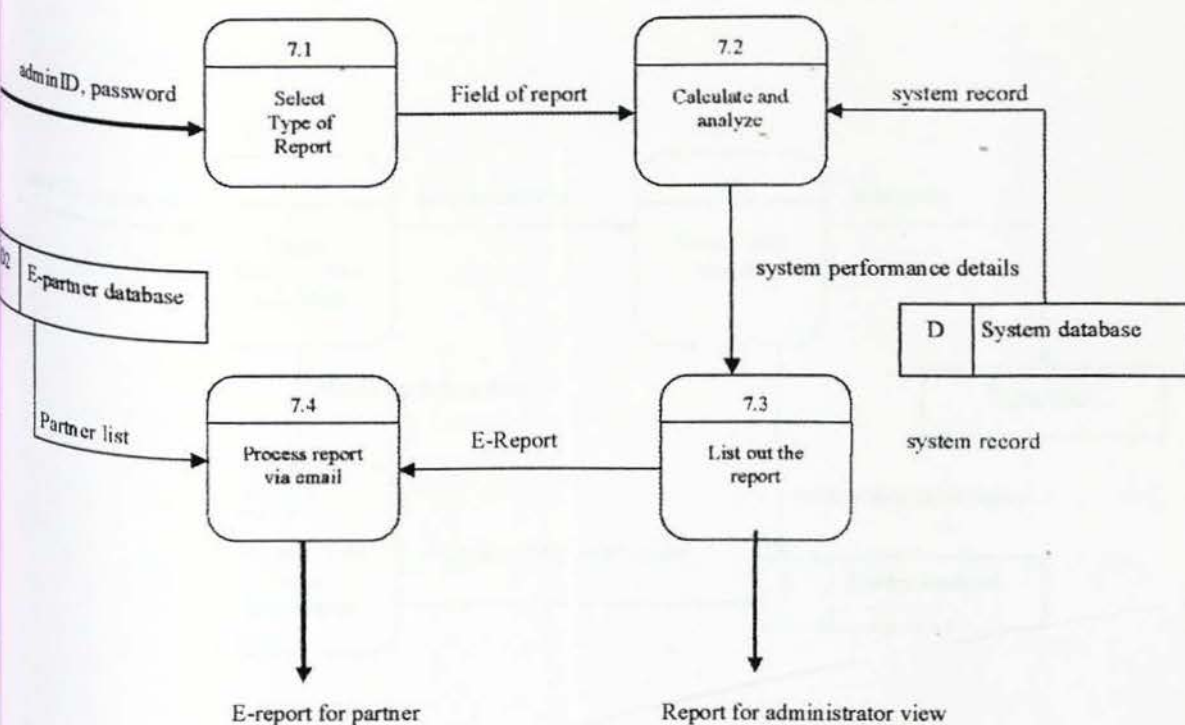


Figure 5.10: Diagram 1- Generate report for administrator module

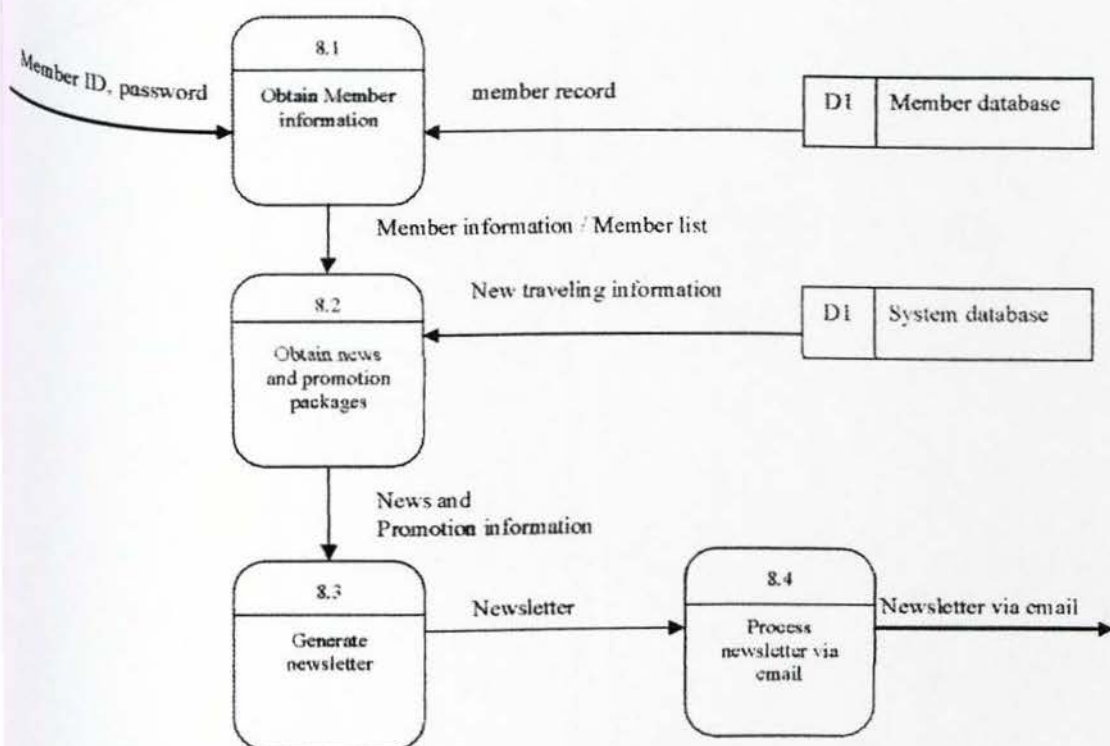


Figure 5.11: Diagram 1- Generate newsletter for member module

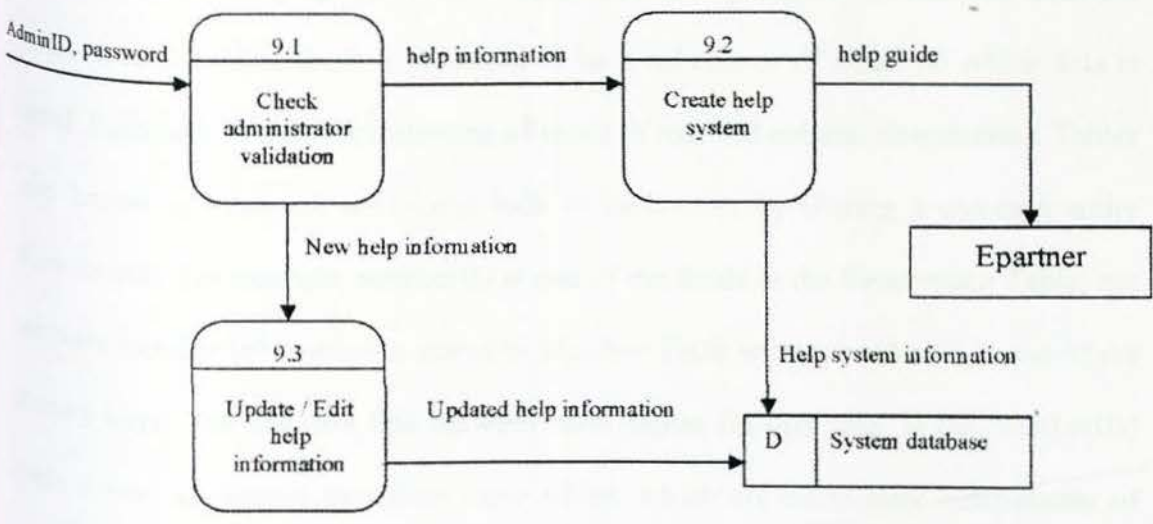


Figure 5.12: Diagram 1- Create Help System Information Module

5.6 Database Design for ETIS

The database for Easytrip Travel Information System (ETIS) is a relational database model. A relational database is perceived to be a collections of tables on which data is stored. Each table is a matrix consisting of series of row and column intersections. Tables (also known as relations) are related back to each other by sharing a common entity characteristic. For example, memberID is one of the fields in the Reservation Table; out complete member information is stored in Member Table where memberID is one of the primary keys. The common link between these tables (in this case, is the memberID) made it easy to connect data from these tables, which are completely independent of another.

5.6.1 Data Dictionary Design

Data Dictionary, also known as Catalog or Repository, stores the metadata of a business information system. Metadata is data about data. The data dictionary stores information about business entities primary and foreign keys, validation rules and triggers.

- ✦ The information listed below is typical:
- ✦ Description of data items in natural language
- ✦ Names associated with data items
- ✦ Details of ownership
- ✦ Data validation rules and triggers
- ✦ Details of the relationship of the data item to others
- ✦ Security level and storage requirements

5.6.1.1 Member Table (MemberTab)

The Member Table will store all the member's particulars, which they submit during the registration. The member's particulars are important for others processes such as generating newsletter, and generate the reports for the administrator. It also stores the password that will be encrypted before store into the database.

Field Name	Data Type	Size	Data Description	Key
Mb_ID	bigint	50	Member's identification	primary
Mb_pwd	varchar	50	Member's password	
Mb_firstname	varchar	50	Member's first name	
Mb_lastname	varchar	50	Member's last name	
Mb_email	varchar	50	Member's email address	
Mb_DOB_day	int	4	Member's date of birth (day)	
Mb_DOB_month	varchar	50	Member's date of birth (month)	
Mb_DOB_year	int	4	Member's date of birth (year)	
Mb_add	varchar	50	Member's address (street name)	
Mb_city	varchar	50	Member's address (city)	
Mb_zipcode	varchar	50	Member's address (zip code)	
Mb_country	varchar	50	Member's address (country)	
Mb_gender	varchar	50	Member's gender	
Mb_status	varchar	50	Member marriage status	
Mb_date_in	datetime	8	Member's registration date	
Mb_newsletter	varchar	50	Member's request for newsletter	
Mb_html	varchar	50	Member's html formatted email acceptance	

Table 5.1: Data field for Member Table

5.6.1.2 Partner Table (PartnerTab)

The Partner Table will store the information about the hoteliers, restaurant or other service provider who join our e-partner program. They submit the related information during the registration process. The partner's particulars will be using for other processes such as reports generating. It also stores the password that will be encrypted before store into the database. All the partner's information will be ensured it's privacy and security.

Field Name	Data Type	Size	Data Description	Key
pt_ID	bigint	8	Partner's identification	primary
pt_pwd	varchar	50	Partner's password	
pt_firstname	varchar	50	Partner's firstname	
pt_lastname	varchar	50	Partner's lastname	

pt_email	varchar	50	Partner's email address	
pt_add	varchar	50	Partner's address (street name)	
pt_city	varchar	50	Partner's address (city)	
pt_zipcode	varchar	50	Partner's address (zipcode)	
pt_fax	varchar	50		
pt_tel	varchar	50	Partner's telephone number	
pt_date_in	datetime	8	Partner's registration date	
pt_useragreement	varchar	50		
pt_field	varchar	50	Partner's services categories	

Table 5.2 : Data Field for partnertab

5.6.1.3 Hotel Table (HotelTab)

The Hotel Table keeps the record for the hoteliers, which include the hotel's description, hotel's room rate and contact person for the hotel. The homepage for the hotels will retrieves the data from this table to be displayed on the web page.

Field Name	Data Type	Size	Data Description	Key
pt_ID	bigint	50	Partner's identification	primary
ht_name	varchar	50	Hotel's name	
ht_email	varchar	50	Hotel's contact email	
ht_contactperson	varchar	50	Hotel's contact person name	
ht_tel	varchar	50	Hotel's telephone number	
ht_add	varchar	50	Hotel's address (street name)	
ht_city	varchar	50	Hotel's address (city)	
ht_zipcode	varchar	50	Hotel's address (zipcode)	
ht_state	varchar	50	Hotel's address (state)	
ht_fax	varchar	50	Hotel's fax number	
ht_facility	varchar	500	Hotel's facilities	
ht_singleroom	varchar	50	Number of single room	
ht_doubleroom	varchar	50	Number of double room	
ht_twinroom	varchar	50	Number of twinroom	
ht_otherroom	varchar	50	Number of other room	
ht_singleroomrate	varchar	50	Room rate for single room	
ht_doubleroomrate	varchar	50	Room rate for double room	
ht_twinroomrate	varchar	50	Room rate for twin room	
ht_otherroomrate	varchar	50	Room rate for other room	
ht_intro	varchar	500	Description about the hotel	
ht_hpadd	varchar	50	Hotel's home page address	
ht_backcolor	varchar	50	Homepage background color	
ht_columncolor	varchar	50	Homepage column color	
ht_fontcolor	varchar	50	Homepage font color	
ht_headcolor	varchar	50	Homepage heading color	

Table 5.3: Data field for hoteltab

5.6.1.4 Restaurant Table (RestaurantTab)

The Restaurant Table keeps the record for the restaurants, which include the restaurant's description. The homepage for the restaurant's will retrieves the data from this table to be displayed on the web page.

Field Name	Data Type	Size	Data Description	Key
pt_ID	bigint	50	Partner's identification	primary
rest_name	varchar	50	Restaurant's name	
rest_email	varchar	50	Restaurant's contact email	
rest_contactperson	varchar	50	Restaurant's contact person name	
rest_tel	varchar	50	Restaurant's telephone number	
rest_add	varchar	50	Restaurant's address (street name)	
rest_city	varchar	50	Restaurant's address (city)	
rest_zipcode	varchar	50	Restaurant's address (zipcode)	
rest_state	varchar	50	Restaurant's address (state)	
rest_fax	varchar	50	Restaurant's fax number	
rest_pricerange	varchar	50	Restaurant's price range	
rest_type	varchar	50	Restaurant's logo	
rest_intro	varchar	500	Type of restaurant	
rest_hpadd	varchar	50	Restaurant's home page address	
rest_backcolor	varchar	50	Homepage background color	
rest_columncolor	varchar	50	Homepage column color	
rest_headcolor	varchar	50	Homepage heading color	
Rest_fontcolor	varchar	50	Homepage font color	

Table 5.4: Data field for restauranttab

5.6.1.5 Food Table (FoodTab)

The Food Table include the various food from the different restaurant, it describe the food and the food price.

Field Name	Data Type	Size	Data Description	Key
pt_ID	bigint	50	Partner's identification	Foreign
Food_ID	bigint	50	Food's identification	primary
Food_desc	varchar	50	Food's description	
Food_name	varchar	50	Food's name	

Table 5.5: Data field for foodtab

5.6.1.6 Reservation Table (ReservationTab)

The Reservation Table store the records for the reservation that been make by the members. It includes the check in date, check out date, types of rooms and number of room that requested to be reserve.

Field Name	Data Type	Size	Data Description	Key
reserve_ID	bigint	8	Reservation identification code	primary
mb_ID	bigint	8	Member's identification code	foreign
pt_ID	bigint	8	Partner's identification code	foreign
checkin_date	varchar	50	Checkin date	
checkout_date	varchar	50	Checkout date	
reserve_date	varchar	50	Date of making reservation	
room_type	varchar	50	Room type wish to reserve	
room_no	varchar	50	Number of room wish to reserve	
price_singleroom	varchar	50	Price for the single room	
price_doubleroom	varchar	50	Price for the double room	
price_twinroom	varchar	50	Price for the twin room	
price_otherroom	varchar	50	Price for the other room	
reserve_status	varchar	50	Reservation status	
day_reserve	varchar	50	Total day of reservation	
Total_price	varchar	50	Total price for the reservation	

Table 5.6: Data Field for reservationtab

5.6.1.7 Car Company Table (carcomtab)

The car rental company table consist the basic information for the company. The homepage for the car rental company will retrieve the data from this table to be displayed..

Field Name	Data Type	Size	Data Description	Key
pt_ID	bigint	8	Partner's identification code	primary
cc_name	varchar	50	Car company name	
cc_contactperson	varchar	50	Company contact person name	
cc_email	varchar	50	Company email address	
cc_tel	varchar	50	Company telephone number	
cc_fax	varchar	50	Company fax number	
Cc_add	varchar	50	Street name of the car rental company	
Cc_city	varchar	50	City of the car rental company	
Cc_zipcode	varchar	50	Zipcode of the car rental company	
Cc_state	varchar	50	State of the car rental company	
Cc_intro	varchar	500	Car rental company introduction	
Cc_hpadd	varchar	50	Car rental company homepage address	
Cc_fontcolor	varchar	50	Homepage font color	
Cc_headcolor	varchar	50	Homepage heading color	
Cc_backcolor	varchar	50	Homepage background color	
Cc_columncolor	varchar	50	Homepage column color	

Table 5.7: Data Field for carcomtab

5.6.1.8 Car table (cartab)

This table consists the data for the various car type offered by the car rental company.

Field Name	Data Type	Size	Data Description	Key
pt ID	bigint	50	Partner's identification code	Foreign
Car ID	bigint	50	Car's identification code	primary
Car type	varchar	50	Car type	
Car rental daily	varchar	50	Daily rental rate	
Car rental weekly	varchar	50	Weekly rental rate	
Car transmission	varchar	50	Car transmission type	

Table 5.8: Data field for cartab

5.6.1.9 Bus Company table (buscomtab)

The bus company table includes the contact and basic information for the company. The homepage of the bus table will retrieve the data from the bus table.

Field Name	Data Type	Size	Data Description	Key
pt ID	bigint	8	Partner's identification code	primary
bc name	varchar	50	Bus company name	
bc contactperson	varchar	50	Company contact person name	
bc email	varchar	50	Company email address	
bc tel	varchar	50	Company telephone number	
bc fax	varchar	50	Company fax number	
bc add	varchar	50	Street name of the bus company	
bc city	varchar	50	City of the bus company	
bc zipcode	varchar	50	Zipcode of the bus company	
bc state	varchar	50	State of the bus company	
bc intro	varchar	500	Bus company introduction	
bc hpadd	varchar	50	Bus company homepage address	
bc fontcolor	varchar	50	Homepage font color	
bc headcolor	varchar	50	Homepage heading color	
bc backcolor	varchar	50	Homepage background color	
bc columncolor	varchar	50	Homepage column color	

Table 5.9: Data field for buscomtab

5.6.1.10 Bus table (bustab)

Field Name	Data Type	Size	Data Description	Key
pt ID	bigint	8	Partner's identification code	Foreign
Bus ID	bigint	8	Bus identification code	Primary
Bus from	varchar	50	Departure station of the bus	
Bus to	varchar	50	Destination of the bus	
Bus standard price	varchar	50	Standard ticket price	
Bus child price	varchar	50	Children ticker price	
Bus leave time	varchar	50	Bus leave time	
Bus terminal	varchar	50	Terminal of the bus	

Table 5.10: Data field for bustab

5.6.1.11 Administrator table (admintab)

The administrator table contain the adminID, administrator password and the administrator login name. This table stores the critical data that will be used for the administrator to login to the administrator account.

Field Name	Data Type	Size	Data Description	Key
Admin_ID	Bigint	8	Administrator identification code	Primary
Admin_pwd	Varchar	50	Administrator password	
Admin_username	varchar	50	Administrator login username	

Table 5.11: Data field for admintab

5.6.1.12 Billing information table (billtab)

The billing information table consists the billing details such as the credit card type, credit card holder name, credit card number and the package booked ID.

Field Name	Data Type	Size	Data Description	Key
Bil_ID	bigint	8	Billing identification code	Primary
Mb_ID	bigint	8	Member's identification code	Foreign
Package_book_ID	bigint	8	Departure station of the bus	Foreign
Ccard_type	varchar	50	Destination of the bus	
Ccardholder_name	varchar	50	Standard ticket price	
Ccard_no	varchar	50	Children ticker price	
Ccard_expired_month	varchar	50	Bus leave time	
Ccard_expired_year	varchar	50	Terminal of the bus	

Table 5.12: Data field for billing information table

5.6.1.13 Currency table (currencytab)

The currency table contains the latest currency changing rate for the various type of currency. The data will be used to convert the currency.

Field Name	Data Type	Size	Data Description	Key
Currency_ID	bigint	8	Currency identification code	Foreign
Currency_unit	bigint	8	Currency unit	Primary
Currency_desc	varchar	50	Description of the currency	
Currency_in	varchar	50	Buy in rate for the currency	
Currency_out	varchar	50	Sold out rate for the currency	
Currency_update	datetime	8	Currency update date time	

Table 5.13: Data field for currency table

5.6.1.14 Feedback table (feedtab)

The feedback table will stores all the feedback from the visitor, it will also stores the reply from the administrator.

Field Name	Data Type	Size	Data Description	Key
Feed ID	bigint	8	Feedback identification code	Primary
Feed name	bigint	8	Responder's name	
Feed email	varchar	50	Responder's email address	
Feed type	varchar	50	Feedback type	
Feed subject	varchar	50	Subject of the feedback	
Feed message	varchar	50	Feedback message	
Feed reply	varchar	50	Reply for the feedback	
Feed status	varchar	50	Feedback status	

Table 5.14: Data field for feedback table

5.6.1.15 Files table (Files)

This Files table stores all the image, the image will be stored as the binary data in this database.

Field Name	Data Type	Size	Data Description	Key
FileID	bigint	8	File's identification code	Primary
Package ID	bigint	8	Package Identification code	Foreign
FileName	varchar	100	File name	
FileSize	varchar	100	File Size	
ContentType	varchar	100	Content type of the file	
BinaryData	image	16	Store the image	

Table 5.15: Data field for Files Table

5.6.1.16 Flight schedule table (flighttab)

The flight schedule table stores all the flight schedule such as the ticket price and the leave day and time for the flight.

Field Name	Data Type	Size	Data Description	Key
Plane ID	bigint	8	Flight identification code	Primary
Plane from	bigint	8	Departure point of the flight	
Plane to	varchar	50	Destination of the flight	
Plane state from	varchar	50	State of departure	
Plane state to	varchar	50	State of destination	
Plane first price	varchar	50	First class ticket price	
Plane economy price	varchar	50	Economy ticket price	
Plane leave day	varchar	50	Leave day of the flight	
Plane leave time	varchar	500	Leave time of the flight	

Table 5.16: Data field for flight table

5.6.1.17 Newsletter table (newstab)

This newstab will stores all the information that includes in the generated newsletter for the member.

Field Name	Data Type	Size	Data Description	Key
news_ID	bigint	8	Newsletter's identification code	primary
News_date	varchar	50	Date of the newsletter	
Item_ID	varchar	50	Item identification code	
Item_name	varchar	50	Item name	
Desc	varchar	500	Description of the item	
Price_adult	varchar	50	Adult price	
Price_child	varchar	50	Children price	
validate	datetime	8	Validation date of the promotion	

Table 5.17: Data field for newsletter table

5.6.1.18 Order status table (ordertab)

The order table will stores the information about the tour package been booked by the members.

Field Name	Data Type	Size	Data Description	Key
Order_ID	bigint	8	Order's identification code	primary
Order_tourbook_ID	bigint	8	Tour book identification code	Foreign
Order_package_ID	Bigint	8	Package identification code	Foreign
Order_mb_ID	bigint	8	Member identification code	foreign
Order_num_adult	varchar	500	Number of adult	
Order_num_child	varchar	50	Number of children	
Order_entrydate	datetime	8	Date of the order	
Order_status	varchar	50	Order status	

Table 5.18: Data field for order status table

5.6.1.19 Tour package booking table (tourbooktab)

The tour book table consists all the data about the member and the booked tour package.

Field Name	Data Type	Size	Data Description	Key
Package_book_ID	bigint	8	Booking identification code	primary
Package_ID	bigint	8	Package identification code	Foreign
Mb_ID	Bigint	8	Member's identification code	Foreign
Day_book	Datetime	8	Day of booking	
num_adult	Varchar	50	Number of adult	
num_child	Varchar	50	Number of children	
Name_adult1	Varchar	50	Name of adult 1	
Name_adult2	Varchar	50	Name of adult 2	
Name_adult3	Varchar	50	Name of adult 3	
Name_adult4	Varchar	50	Name of adult 4	
Name_adult5	Varchar	50	Name of adult 5	
Name_adult6	Varchar	50	Name of adult 6	
Name_adult7	Varchar	50	Name of adult 7	

Name_adult8	Varchar	50	Name of adult 8	
Name_child1	Varchar	50	Name of child 1	
Name_child2	Varchar	50	Name of child 2	
Name_child3	Varchar	50	Name of child 3	
Name_child4	Varchar	50	Name of child 4	
Total_price	Varchar	50	Total price for the tour package	
Remark	Varchar	50	Remark for the tour package	
Booking_status	Varchar	50	Booking status	

Table 5.19: Data field for tourbooktab

5.6.1.20 Tour Package Table (TourPackageTab)

The tour package table includes the promotion tour packages details such as description, price and duration.

Field Name	Data Type	Size	Data Description	Key
Package_ID	bigint	8	Package identification code	Primary
Package_status	varchar	50	Package status	
Package_name	Varchar	50	Package name	
Description	Varchar	500	Description of the tour package	
Package_day	Smalldatetime	4	Day of the tour package	
Package_duration	Int	4	Duration	
Price_single	Money	8	Adult price	
Price_children	money	8	Child price	
Package_category	Varchar	50	Tuor package category	
Package_state	Varchar	50	State of the tour package	
Package_maxpax	Varchar	50	Max pax of the tour package	
Package_currtravelers	Varchar	50	Package current travelers	

Table 5.20: Data Field for tour package table

5.6.1.21 Usage tracking table (tracking)

The tracking table stores all the tracking from the web visitors. This include the ip address, the visitor's browser, the visitor's platform, and the language used by the computer of the visitors.

Field Name	Data Type	Size	Data Description	Key
Tracking_ID	bigint	8	Tracking Identification Code	primary
Host	Varchar	50	Host	
Page_visited	Varchar	50	Page address	
Ipaddress	varchar	50	Ip address of the visitors	
Hostname	Varchar	50	Hostname	
Referrer	Varchar	50	Referrer	
Platform	Varchar	50	Visitor's platform	
Languageaccept	Varchar	50	Language acceptance	
Serversoftware	Varchar	50	Server software	

Dateenter	Varchar	50	Visiting date	
strDayName	Varchar	50	Day name	
Timeenter	Varchar	50	Visiting time	
monthenter	Varchar	50	Month of visiting	
Yearenter	Varchar	50	Year of visiting	
Serverconnection	Varchar	50	Server connection	
Serverprotocol	Varchar	50	Server protocol	
Serverport	Varchar	50	Server port	
Serveracceptencoding	Varchar	50	Server acceptance encoding	
serverurl	Varchar	50	Server url	

Table 5.21: Data field for usage tracking table

5.6.2 The Entity Relationship Diagram for ETIS backend system

The Entity-Relationship (ER) Data Model is a detailed, logical representation of the data for an organization or a business application. The model is expressed in terms of entities in the business environment, the relationship between entities, and the attributes of both entities and relationships. The ERD is used to graphically represent an ER Data Model.

(Dr. P. Sellapan, 2000)

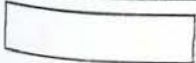




Symbol	Explanation	Meaning
	Entity	A class of person, place or things
	Associative	Used to join 2 entities
	To 1 relationship	Exactly 1
	To many relationship	1 or more
	To 0 or more relationship	0, 1 or more

Table 5.22: Symbol for the ERD

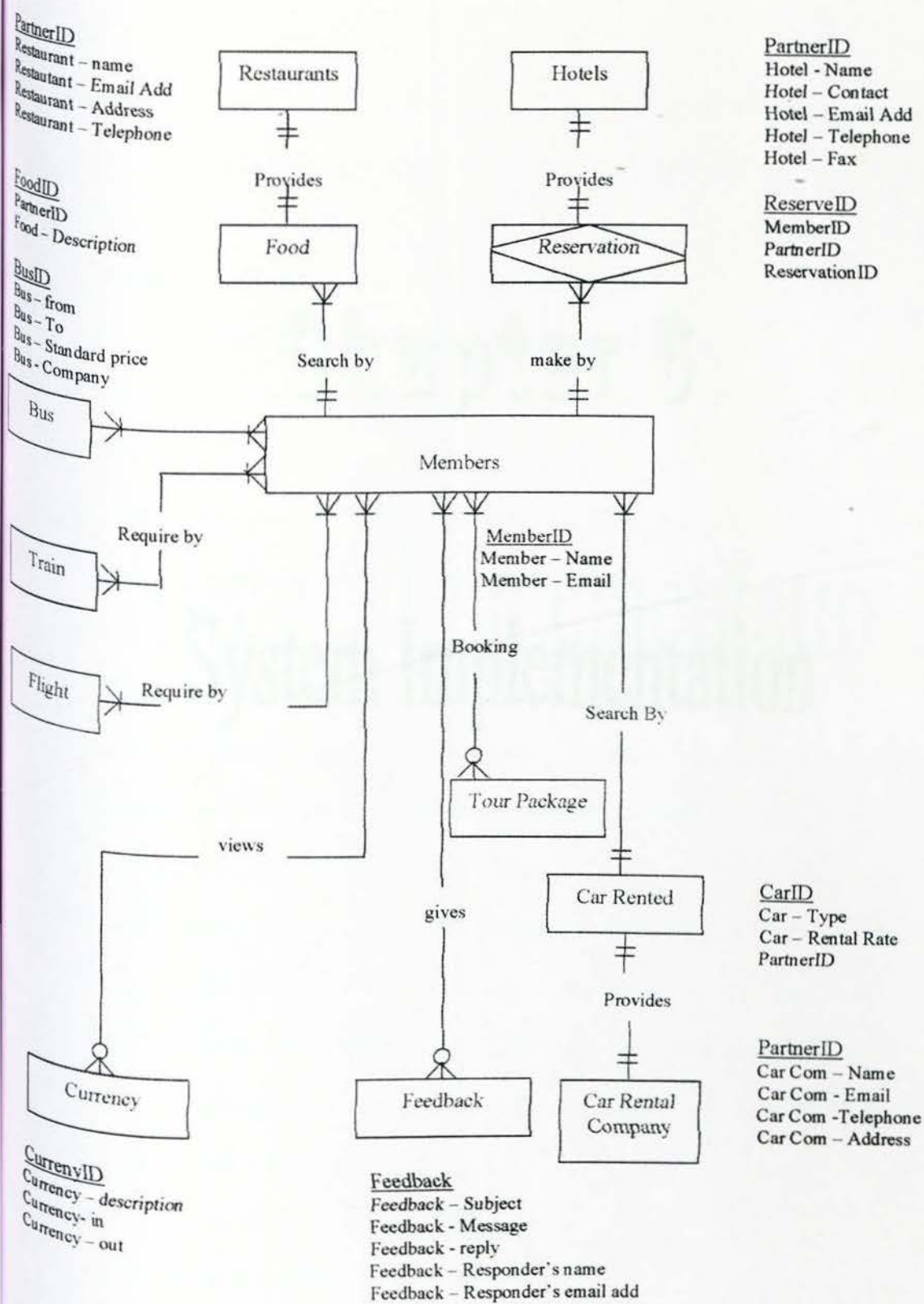


Figure 5.13: Entity Relationship Diagram for ETIS backend system

Chapter 6

System Implementation

Chapter 6: System Implementation

System implementation is a process that converts the system design into the program codes. For ETIS backend system, it is develop using client-server software architecture, running under Window NT.

6.1 Development tools

- (a) Operating system – Windows NT 4.0, Windows 2000, Windows ME
- (b) Program coding – Active Server Page (ASP), java script, VBscript
- (c) Database development – SQL Server, Access
- (d) Graphic creation tools – Adobe Photoshop 6.0, Macromedia Fireworks
- (e) Mail Server – Simple Mail Transfer Protocol (SMTP)

6.2 Platform development

The platform development will include setting up the Windows NT and SQL Server. These steps are needed to enable the system running in a proper way.

6.2.1 Setting Windows NT 4.0

Before the system is being developed, it is needed to run under the Windows NT Server. During the installation of Windows NT 4.0, the hard disk is formatted using NT File System (NTFS) format to ensure a more stable and secured NT transaction across the platform. Several steps are involved during the installation.

1. Install Windows NT 4.0
2. Install Windows NT Service Pack 3
3. Install NT Option Pack 4 (IIS 4.0)
4. Install NT Service Pack 4, NT Service Pack 5 and NT Service Pack 6

6.2.2 Setting the Microsoft SQL Server 2000

1. Install the SQL Server 2000
2. Create the new database named "ETIS database"
3. Create each table with the necessary fields.

6.3 Module implementation

Same with the other application, tasks must be performed before the ASP application can start. We need to open a log file or start some service objects, because an application in ASP speak can span multiple pages, there is no set place to start. In addition, the session and application object both have the events that are used for startup and shutdown. All of these tasks are handled by the global.asa file.

```
<SCRIPT LANGUAGE = VBScript RUNAT= Server>
Sub Application_OnStart()
    Application("SiteURL")="http://localhost/WET000033/easytrip"
End Sub

Sub Session_OnStart()
    Session("IsGoodUser") = False
    Session("mb_name") = False
    Session("pt_name") = False
    Session("memberID") = False
    Session("partnerID") = False
    Session("reserveID") = False
    Session("hotelID") = False
    Session("CarID") = False
    Session("FoodID") = False
End Sub

Sub Session_OnEnd()
    Session.Abandon
End Sub
</SCRIPT>
```

Figure 6.1: Global.asa file

6.3.1 Epartner Module

Epartner module is one of the most important modules in ETIS backend system. All the local hotelier, car rental company, bus company and restaurant can corporate with us to promote their service or food through our web site or the newsletter. In order to be our e-partner, they have to and they are required to submit their own partner ID and password. The partner ID will be used as the primary key to identify the partner. They are required to submit their company information to build their own pages. They can update or edit their information anytime by logon to their own account and EasyTrip Travel Information System management team will keep track the latest information.

6.3.1.1 Epartner Login

Epartner have to key in their login name and password to gain the access to their own account for the further process. The program will check whether the login name given is valid and whether the password is match with the login name. If either the login name or password is invalid, then the error message will be prompt out, or the epartner will login to the welcome page successfully.

6.3.1.2 New epartner registration

Epartner registrations need the epartner to provide their basic information. Some of the fields are compulsory, such as the username, password and contact information, if these columns left blank, the error message will be prompt out. Epartner need to fill in the blanks with the correct data type before they can proceed to the next page.


```

<!--#include file ="connection.asp"-->
<% FUNCTION fixQuote( theString )
    fixQuote = REPLACE( theString, "'", "" )
END FUNCTION
%>
<%
===== Retrieve the registration form fields and store them to local variables =====
    login = TRIM (Request("Login"))
    strpassword = TRIM (Request("password"))
    username = TRIM (Request("username"))
    username = fixQuote(username)
===== Open the connection =====
    Set objRst = Server.CreateObject("ADODB.Recordset")
===== Set the SQL Query =====
    strSQL = "SELECT * FROM partnertab WHERE (pt_username = " & username & ")"
    objRst.open strSQL, objConn
    If objRst.EOF <> FALSE Then
        %>
        <html>
        <head><title>E partner Login</title></head>
        <body style="text-align: center">
        <p align="center">
        </p>
        <font face="Arial" size="2">The login '<%= username %>' cannot be found.</font>
        <b><font face="Arial" size="2">Click <a href="default.asp">here</a> to try again. </font></b>
        </body>
        </html>
        <%
        Response.End
    ElseIf Trim(objRst("pt_pwd")) <> Trim(strpassword) Then
        %>
        <html>
        <head><title>Epartner Login Error</title></head>
        <body style="text-align: center">
        
        <font face="Arial" size="2">The password are incorrect. </font>
        <font size="2" face="Arial">Click <a href="default.asp">here</a> to try again. </font>
        </body>
        </html>
        <%
        Response.End
    End If%>
<%
===== Now redirect the user to the main page as a logged in user =====
    set myrecord= objConn.execute("Select pt_ID from partnertab where pt_username = " &
username & "'"') %>
    <%
    partner=myrecord("pt_ID")
    Session("partnerID") = partner
    Response.Redirect "pt_welcome.asp"
    %>

```

Figure 6.2 : Postlogin.asp

6.3.1.3 Add/ Edit homepage function

Epartner can choose to build their own homepage by using the wizard provided, epartner can input their company information, contact information, and choose the background color, heading color, column color and font color for their homepage layout.

6.3.1.4 Change password

Epartner can choose to change their password from time to time due to the security reason. Epartner must first enter the user login name and existing old password before they enter their new password and confirm new password.

```

<!--#include file="connection.asp"-->
<%

'===== Retrieve the member information from the previous page =====
username = TRIM (Request("username"))
oldpassword = TRIM (Request("oldpassword"))
newpassword = TRIM (Request("newpassword"))

'===== Open the connection =====
Set objRst = Server.CreateObject("ADODB.Recordset")

'===== Set the SQL Query =====
strSQL = "SELECT * FROM partnertab WHERE (pt_username = " & username & ")"
objRst.open strSQL, objConn

%>
<%
If objRst.EOF <> FALSE Then
    %>
        <html>
        <head>
        <title>Partner Change Password Error</title>
        </head>
        <body style="text-align: center">
        
        <font face="Arial" size="2">
        <b>The login name '<%= username %>' cannot be found. Please try again. </b>
        Click <a href="pt_change_password.asp">here</a> to try again.
        </p>
        </body>
        </html>
    <% elseif Trim(objRst("pt_pwd")) <> Trim(oldpassword) Then
        %>
            <html>
            <head>
            <title>Partner Change Password Error</title>
            </head>
            <body style="text-align: center">
            
            <b>The old password you provided for '<%= username %>' are incorrect. Please try again. </b>
            Click <a href="pt_change_password.asp">here</a> to try again.
            </body>
            </html>
            <!--include file="footer.html"-->
        <%Else %>
            <% sqlString = "UPDATE partnertab SET pt_pwd = " & newpassword & " WHERE
(pt_username= " & username & ")"
            objConn.Execute sqlString
            Response.Redirect("pt_password_changed.asp")
        %>
    <%end if %>

```

Figure 6.3 : Coding for changing password

6.3.1.5 Cancel partnership

Epartner can terminate their account whenever they wish to do so, all they have to do is just key in their user login name and their password. All their record will be deleted from the ETIS database.

```
sqlString = "DELETE FROM partnertab WHERE (pt_pwd = " & strpassword & ") AND (pt_username = " & username & ") "  
objConn.Execute sqlString
```

Figure 6.4: SQL statement that delete the user from the database

6.3.1.6 Functions

There are a numbers of function that been stored in the epartner's function module, which is include the validation for the fields entered by the epartner's and sending welcome email function to the new user.

The email validation function will check whether the email is valid or not by detect the special characters @ and . in the email address.

The already user function will check whether the username exist in the epartner list. If it does exist, the epartner will be notified to select another different username.


```

===== fix Quotes function =====
FUNCTION fixQuotes( theString )
    fixQuotes = REPLACE( theString, "'", "" )
END FUNCTION

===== Password validation =====
FUNCTION checkpassword( byVal username, byVal password, byRef objConn )
    sqlString = "SELECT pt_ID FROM partnertab " &
        "WHERE pt_username=" & username & "" &
        "AND pt_pwd=" & password & ""
    SET RS = objConn.Execute( sqlString )
    IF RS.EOF THEN
        checkpassword = - 1
    ELSE
        checkpassword = RS( "pt_ID" )
        addCookie "username", username
        addCookie "password", password
    END IF
END FUNCTION

===== Check validation of the email address =====
FUNCTION invalidEmail( email )
    IF INSTR( email, "@" ) = 0 OR INSTR( email, "." ) = 0 THEN
        invalidEmail = TRUE
    ELSE
        invalidEmail = FALSE
    END IF
END FUNCTION
IF invalidEmail( email ) THEN
    errorForm "You did not enter a valid email address", backpage
END IF

===== Username validation =====
FUNCTION alreadyUser( theUsername )
    sqlString = "SELECT pt_username FROM partnertab " &
        "WHERE pt_username=" & fixQuotes( theUsername ) & ""
    SET RS = objConn.Execute( sqlString )
    IF RS.EOF THEN
        alreadyUser = FALSE
    ELSE
        alreadyUser = TRUE
    END IF
    RS.Close
END FUNCTION

```

Figure 6.5: Functions for epartner module

6.3.2 Member module

Member module include the member registration, member login , view or update personal information, member change password, member forget password, membership cancellation, view reservation record, view shopping cart and view order processing status.

6.3.2.1 New Member Registration

New member need to register before they can make any reservation or tour package booking. New member have to provide an username and password, and others contact and personal information to complete the registration procedure.

```
SUB errorForm( errorMsg, backpage )
%>
<html>
<head><title>Error Message</title></head>
<body>
<tr><td>
<font face="Arial" size="3" ><b>There was a problem with the information you entered: </b></font>
<br><%=errorMsg%></font>
<form method="post" action=<%=backpage%>
<input name="error" type="hidden" value="1">
<% formFields %>
<input type="submit" value="edit" name="edit">
</form>
</td></tr>
</body>
</html>
<%
Response.End
END SUB
%>

'===== Check For Required Fields =====
IF username = "" THEN
    errorForm "You must enter a username.", backpage
END IF
IF password = "" THEN
    errorForm "You must enter a password.", backpage
END IF
IF password <> confirmpassword THEN
    errorForm "You password and confirmpassword does not match!", backpage
END IF
IF email = "" THEN
    errorForm "You must enter your email address.", backpage
END IF
IF dayDOB = "" THEN
    errorForm " You must select the day of birth", backpage
END IF
IF add = "" THEN
    errorForm "You must enter your street address.", backpage
END IF
IF useragreement = "" THEN
    errorForm "You must make sure that you have read and accept the user agreement.", backpage
END IF
```

Figure 6.6: Validation for new member registration

Once the new member has been registered successfully, the welcome new member email will be sent to the member email address. HTML formatted email will be sent to the member who wish and able to receive the HTML formatted email.

```
<%
===== Send email to new user =====
SUB sendNewUserMail(sUserName, sUserMail, fHtml)
    Dim newMailObj
    Dim sMailBody

    Set newMailObj = CreateObject("CDONTS.Newmail")
    newMailObj.From = "customer-service@EasyTrip.com"
    newMailObj.To = sUserMail
    newMailObj.Subject = "Welcome to EasyTrip.com"

    ===== email to the user with text-only mail box =====
    if fHtml = "0" then
        newMailObj.BodyFormat = CdoBodyFormatText
        newMailObj.MailFormat = CdoMailFormatMime
        sMailBody = "Dear " & sUserName & ", " & vbNewLine & vbNewLine
        sMailBody = sMailBody & " Thank you for registering at our site!" & vbNewLine & vbNewLine
        sMailBody = sMailBody & " We look forward to serving you in the future. "
        sMailBody = sMailBody & "Visit us again soon at http://www.easytrip.com" & vbNewLine &
        vbNewLine
        sMailBody = sMailBody & "Sincerely yours," & vbNewLine & vbNewLine
        sMailBody = sMailBody & "Ching Yu Yu," & vbNewLine
        sMailBody = sMailBody & "Administrator, EasyTrip.com."
        newMailObj.Body = sMailBody
    else
        ===== email to the use with the html acceptance mail box =====
        newMailObj.BodyFormat = CdoBodyFormatHTML
        newMailObj.MailFormat = CdoMailFormatMime
        newMailObj.ContentBase = "http://www.easytrip.com/"
        newMailObj.ContentLocation = "main/"
        sMailBody = "<HTML><HEAD><TITLE>Thanks from Easytrip.com</TITLE></HEAD>"
        sMailBody = sMailBody & "<BODY><table width='\"640\"' border='\"0\"' bgcolor='\"#ffffff\"'
        cellpadding='\"0\"' cellspacing='\"0\"'>"
        sMailBody = sMailBody & "<tr><td></td></tr>"
        sMailBody = sMailBody & "<tr><td colspan='\"2\"'><hr width='\"640\"'></td></tr></table>"
        sMailBody = sMailBody & "<font face='\"Arial\"' size='\"2\"'><p>Dear " & sUserName & ", "
        sMailBody = sMailBody & "<p>Thank you for registering at our site!<p>We look forward to serving
        you in the future. "
        sMailBody = sMailBody & "Visit us again soon at <a href='\"http://www.easytrip.com/main\"'>"
        sMailBody = sMailBody & "http://www.easytrip.com</a>. <br><br>Sincerely yours, <br><br>Ching"
        sMailBody = sMailBody & "<br>Administrator, Easytrip.com</font></BODY></HTML>"
        newMailObj.Body = sMailBody
    end if
    newMailObj.Send
    Set newMailObj = Nothing
END SUB
%>
```

Figure 6.7: Sending welcome email to new user

6.3.2.2 Member forget password

If the member have forgotten his/her respective account password, they can crack password by enter their personal information such as first name, last name, email address and birthday. Their account password will be sent to their email account.

```
<%  
===== send the user password to user =====  
SUB sendPassword(sUserName, sUserMail, sPassword)  
Dim newMailObj  
Dim sMailBody  
  
Set newMailObj = CreateObject("CDONTS.Newmail")  
newMailObj.From = "customer-service@EasyTrip.com"  
newMailObj.To = sUserMail  
newMailObj.Subject = "Your Password"  
  
newMailObj.BodyFormat = CdoBodyFormatText  
newMailObj.MailFormat = CdoMailFormatMime  
sMailBody = "Dear " & sUserName & ", " & vbNewLine & vbNewLine  
sMailBody = sMailBody & "Your password for your account in EasyTrip.com is " & sPassword & " " &  
vbNewLine & vbNewLine  
sMailBody = sMailBody & "We look forward to serving you in the future. "  
sMailBody = sMailBody & "Visit us again soon at http://www.easytrip.com" & vbNewLine & vbNewLine  
sMailBody = sMailBody & "Sincerely yours," & vbNewLine & vbNewLine  
sMailBody = sMailBody & "Ching Yu Yu," & vbNewLine  
sMailBody = sMailBody & "Administrator, EasyTrip.com."  
newMailObj.Body = sMailBody  
  
END SUB  
>%
```

Figure 6.8: Sending the forgotten password to the member

6.3.2.3 View / Update personal information

Member can view can update their contact information such as email address, address, telephone number and fax number anytime they wish to do so.

6.3.2.4 View Reservation Record

As a member of Easytrip.com, a member can make the hotel reservation and also have their own record for the previous hotel reservation record. Besides that, they also

can choose to modify their reservation if the reservation status is still active and has not expired.

```
<%
===== Request information from the previous page =====
    mbID = Session("memberID")
===== Create connection to the membertab for the selected member =====
    set mbRs = objConn.Execute( "SELECT * FROM membertab WHERE (mb_ID = "&mbID&"") ")
    set Rs = objConn.Execute( "SELECT * FROM reservationtab WHERE (mb_ID = "&mbID&"")
ORDER BY reserve_date")%>

<% If Rs.EOF then%>
    <p align = "center"><font face="Arial" size="2" color="red"><b><%= ("Sorry, no reservation history
was found")%></b></font></p>
<% else %>
<% Do Until Rs.EOF%>
<% ptID = Rs("pt_ID")%>
<% reserveID = Rs("reserve_ID")%>
<% set htRs = objConn.Execute( "SELECT ht_name FROM hoteltab WHERE (pt_ID = "&ptID&"") %>
<table>
<tr>
<td ><b><font face="Arial" size="2" >Status:</font></b></td>
    <% checkin = Rs("checkin_date") %>
    <% today = date() %>
    <% status = datediff("d", today, checkin)%>
    <% If cint(status) < 0 then %>
    <%= "pasive"%>
    <% elseif cint(status) = 0 then%>
    <%= "checkin date" %>
    <% else%>
    <%= "active"%><%End If%>
<% sqlString = objConn.Execute ("Update reservationtab SET reserve_status = "&status&" "&_
WHERE (reserve_ID = "&reserveID&"")%>
<%End If%></td>
</tr>
<table>
<% Rs.MoveNext
Loop %>
<%end if %>
```

Figure 6.9: Part of coding for the member's reservation history review

6.3.2.5 Cancel Membership

All member can choose to terminate their membership with Easytrip.com

whenever they wish to do so, all their record will be deleted from the ETIS database.

6.3.2.6 Member Log out

Member can log out from their account after they have been complete their account processing.

```
<html>
<head>
<title>Member Log out </title>
</head>
<body>
<% Session.abandon %>
<b><font face="Arial" size="2"><font color="#FF0000">Log out</font>
Successfully</font></b>
<p align="center"><b><font face="Arial" size="2"><a href="default.asp">Log in as
different user</a></font></b></p>
</body>
</html>
```

Figure 6.10: the Session.Abandon during the member log out

6.3.3 Administrator module

Administrator module plays an important role in ETIS as it consists the tour package management, flight schedule management and train schedule management. Besides that, it also provides the record review for the members, epartner and hotel reservation. Administrator module also includes the function to manage the feedback from the user, order processing for tour package booking and updating the currency converter table. Administrator also can generate the usage tracking report and member's newsletter.

6.3.3.1 Member record review

Administrator can choose to view the member record from four different perspectives: by member date in (range by month), newsletter member list, and member's reservation record (by date) and member's details record (choose the related field).

6.3.3.2 Epartner record review

The epartner record can be view in four different perspectives as well: by partner date in (range by month), service categories, by state and partner's details record (choose the related field)

```
<!--#include file="connection.asp"-->
<!--#INCLUDE VIRTUAL = "adovbs.inc"-->
<% showPage = TRIM (Request("showPage"))
    allPages = TRIM( Request( "allPages" ) )
    backpage = "mb_basic_info2.asp"
    IF showPage = "" THEN
        showPage = 1
    END IF %>
<% strmonth = Trim(Request("month")) %>
<% If strmonth="Jan" then %>
    <tr>
    <td width="100%" colspan="2" bgcolor="white"> <font face="Arial" size="3" >
    <%Response.Write "Member Basic Personal Information Enter in January"%></font>
    <% sql = "SELECT * FROM membertab WHERE (DATEPART(month, mb_date_in) = '1') "&_
"ORDER BY mb_date_in"%>
    <% Set RS = Server.CreateObject( "ADODB.Recordset" ) %>
    <% RS.CursorType = adOpenStatic
    RS.ActiveConnection = objConn
    RS.Open sql
    %>
    <% If RS.EOF <> False then %>
<font face="Arial" size="3"><%Response.write "Sorry, No record available for January"%></font>
    <%
    ELSE
    IF allPages = "" THEN
        RS.PageSize = 5
    ELSE
        RS.PageSize = 99999
    END IF
    IF NOT RS.EOF THEN
        RS.AbsolutePage = cINT( showPage )
    END IF
    WHILE NOT RS.EOF AND rowCount < RS.PageSize
    rowCount = rowCount + 1
    %>
    <br>
    <font face="Arial" size="1" color="black">
    <%Response.write "Username:"
    Response.write RS("mb_username")%>
    <% Response.write "Fullname:"
    Response.write RS("mb_firstname")%>
    <% Response.write RS("mb_lastname")%>
    <% Response.write "Country:"
    Response.write RS("mb_country")%>
    <% Response.write "Member date in:"
    Response.write RS("mb_date_in")%> </font>
    <% RS.MoveNext
    WEND
    END IF %>
```

Figure 6.11 Epartner record review in administrator module

```

<hr>
<font face="Arial">
<% IF RS.PageCount > 1 THEN %>
<font size="2">
Page:
<%
FOR i = 1 TO RS.PageCount
IF cINT( showPage ) = i THEN
%>
<b><%=i%></b> |
<% ELSE %>
<a href="mb_basic_info2.asp?showpage=<%=i%>&month=<%=strmonth%>">
<%=i%> |
</a>
<%
END IF
NEXT
IF allPages <> "" THEN
%>
<b>All</b>
<% ELSE %>
<a href="mb_basic_info2.asp?allPages=1&month=<%=strmonth%>">
All
</a>
</font>
</font>
<%
END IF
END IF
RS.Close
%>
</center>
</div>
<p align="center"><b>&nbsp;<font face="Arial" size="2"><a href="pt_record_main.asp">Epartner
Record Main Page</a></font></b></p>
</body>
</html>
<!--#include file="footer.html"-->
<% End IF %>

```

Figure 6.12: Part of coding for member record review function

6.3.3.3 Reservation Record Review

Administrator can view all the hotel reservation records by the selected month. They also can view the active reservation records. The active reservation records means that the reservations where the check in date are not expired. All these reservation records are managed by the administrator.

6.3.3.4 Tour package record review

The tour package record review provides the function for the administrator to view all the active and previous tour package offered by Easytrip.com. Administrator can choose the category of the tour package or the state of the tour package to view. There are 7 category of the tour package includes: Adventure, Historical and Heritage, Natural Tour, Shopping tour, Sight seeing, Water Sports and Wildlife.

6.3.3.5 Tour Package Management

Tour package management includes the add new package function, update package function, delete package function, generate reminder for the member function, order processing function and the upload images function.

```
<%  
'===== Add New Package =====  
IF addTour <> "" THEN  
    sqlString = "INSERT INTO tourtab " &  
    "( package_name, package_state, price_single, price_children, " &  
    "package_category, package_day, package_duration, description, " &  
    "package_maxpax, package_status ) VALUES ( " &  
    "" & packageName & ", " &  
    "" & packageState & ", " &  
    packagePrice & ", " &  
    package_child_Price & ", " &  
    "" & packageCategory & ", " &  
    "" & packageDate & ", " &  
    "" & packageDuration & ", " &  
    "" & packageBriefDesc & ", " &  
    "" & packageMaxpax & ", " &  
    packageStatus & " )"  
objConn.Execute sqlString  
>%
```

Figure 6.13: SQL statement for adding the new tour package into database


```

' ===== Update Tour =====
IF updateTour <> "" THEN

sqlString = "UPDATE tourtab SET " & _
"package_name=" & fixQuotes( packageName ) & "," & _
"package_state=" & packageState & "," & _
"price_single=" & cCUR( packagePrice ) & "," & _
"price_children=" & cCUR( package_child_Price ) & "," & _
"package_category=" & fixQuotes( packageCategory ) & "," & _
"package_day=" & packageDate & "," & _
"package_duration=" & packageDuration & "," & _
"description=" & fixQuotes( packageBriefDesc ) & "," & _
"package_maxpax=" & cCur( packageMaxpax ) & "," & _
"package_status=" & packageStatus & " WHERE " & _
"package_ID=" & packageID

objConn.Execute sqlString

%>

```

Figure 6.14: SQL statement for updating the tour package

```

<%
' =====
' Container of Field Properties
Class clsField
    Public FileName
    Public ContentType
    Public Value
    Public FieldName
    Public Length
    Public BinaryData
End Class
' =====
Class clsUpload
' =====
    Private nFieldCount
    Private oFields()

' =====
    Public Property Get Count()
        Count = nFieldCount
    End Property
' =====
    Public Default Property Get Field(ByRef asFieldName)
        Dim lnLength
        Dim lnIndex

' =====
    Public Function Exists(ByRef avKeyIndex)
        Exists = Not IndexOf(avKeyIndex) = -1
    End Function

```

Figure 6.15: Part of coding for the clsUpload file

```

Public Default Property Get Field(ByRef asFieldName)
    Dim InLength
    Dim InIndex

    InLength = UBound(oFields)

    If IsNumeric(asFieldName) Then
        If InLength >= asFieldName And asFieldName > -1 Then
            Set Field = oFields(asFieldName)
        Else
            Set Field = New clsField
        End If
    Else
        For InIndex = 0 To InLength
            If LCase(oFields(InIndex).FieldName) = LCase(asFieldName) Then
                Set Field = oFields(InIndex)
                Exit Property
            End If
        Next
        Set Field = New clsField
    End If
End Property
=====
Public Property Get ValueOf(ByRef avKeyIndex)
    Dim InIndex
    InIndex = IndexOf(avKeyIndex)
    If InIndex = -1 Then Exit Property
    ValueOf = oFields(InIndex).Value
End Property
=====
Public Property Get FileNameOf(ByRef avKeyIndex)
    Dim InIndex
    InIndex = IndexOf(avKeyIndex)
    If InIndex = -1 Then Exit Property
    FileNameOf = oFields(InIndex).FileName
End Property
=====
Public Property Get LengthOf(ByRef avKeyIndex)
    Dim InIndex
    InIndex = IndexOf(avKeyIndex)
    If InIndex = -1 Then Exit Property
    LengthOf = oFields(InIndex).LengthOf
End Property
=====
Public Property Get BinaryDataOf(ByRef avKeyIndex)
    Dim InIndex
    InIndex = IndexOf(avKeyIndex)
    If InIndex = -1 Then Exit Property
    BinaryDataOf = oFields(InIndex).BinaryData
End Property
=====
Public Property Get ContentTypeOf(ByRef avKeyIndex)
    Dim InIndex
    InIndex = IndexOf(avKeyIndex)
    If InIndex = -1 Then Exit Property
    ContentTypeOf = oFields(InIndex).ContentType
End Property

```

Figure 6.16: Cont. Part of coding for the clsUpload file

```

<!--#Include file="clsUpload.asp"-->
<!--#Include file="connection.asp"-->
<%
Dim oUpload
Dim oField
Dim objConn
Dim oRs
Dim sSQL
Dim sFileName
packageID = Session("packageID")

Set oUpload = New clsUpload
Set oFile = oUpload("File1")

' parse the file name
sFileName = oFile.FileName
If Not InStr(sFileName, "\") = 0 Then
    sFileName = Mid(sFileName, InStrRev(sFileName, "\") + 1)
End If

Set oRs = Server.CreateObject("ADODB.Recordset")
sSQL = "SELECT FileID, package_ID, FileName, FileSize, ContentType, BinaryData FROM Files
WHERE 1=2"

oRs.Open sSQL, objConn, 3, 3
oRs.AddNew
oRs.Fields("package_ID") = packageID
oRs.Fields("FileName") = sFileName
oRs.Fields("FileSize") = oFile.Length
oRs.Fields("ContentType") = oFile.ContentType
oRs.Fields("BinaryData").AppendChunk = oFile.BinaryData & ChrB(0)
oRs.Update
oRs.Close

sSQL = "SELECT Top 1 FileID, FileName From Files Order By FileID Desc"
oRs.Open sSQL, objConn

If Not oRs.EOF Then

    %>
    <p align="center">
    <b><font face="Arial" size="2">File has been saved in database. View this
file:</font></b><BR><BR>
    <font face="Arial" size="2">
    <A href="DataFile.asp?FileID=<%=oRs(0)%>" target=_blank><%=oRs(1)%></A></font> <b>
    <font face="Arial">
    <br>
    <A href="managetour.asp"><font size="2">Tour Management Main Page</font></a><font
size="2">
    </font></font></b></p>

    <%
End If
Set oRs = Nothing
Set objConn = Nothing
Set oFile = Nothing
Set oUpload = Nothing
%>
<!--#include file="footer.html"-->

```

Figure 6.17: Coding for store the images into the database


```

<!--#Include File="connection.asp"-->
<%
Dim objConn
Dim oRs
Dim sSQL
Dim nFileID

nFileID = Request.QueryString("FileID")

If Not nFileID = "" And IsNumeric(nFileID) Then

    Set oRs = Server.CreateObject("ADODB.Recordset")

    sSQL = "SELECT FileName, ContentType, BinaryData FROM Files WHERE FileID = " &
Request.QueryString("FileID")

    oRs.Open sSQL, objConn, 3, 3

    If Not oRs.EOF Then
        Response.ContentType = oRs(1)
        Response.BinaryWrite oRs(2)
    Else
        Response.Write("File could not be found")
    End If

    oRs.Close
    objConn.Close

    Set oRs = Nothing
    Set objConn = Nothing

Else
    Response.Write("File could not be found")
End If
%>

```

Figure 6.18: Coding for display the image stored in the database

6.3.3.6 Flight schedule management

Administrator can add, update and delete the flight schedule for the ETIS. All the flight details are stored into the ETIS database in flighttab, and flight schedule can be view in the front end.

6.3.3.7 Train schedule management

Administrator also can add, update and delete the train schedule in the administrator module.

6.3.3.8 Usage Tracking

The usage tracking will track the visitors who visit to Easytrip.com. It will display the pages with the most hits. It includes the highest daily visited pages, monthly visited pages and annual visited pages. The usage tracking also will track the visitors IP address, the language used by the computer of the visitors, the connection type and browser used by the visitors.

The analysis from the result of the usage tracking will help the administrator to improve the performance of the web sites.

```
<!--#include file="connection.asp"-->
<%
Dim Currdate,theDate,monthenter,yearenter,iDay
Currdate = Now()
dateenter =FormatDateTime(Currdate, vbShortDate)
timeenter =FormatDateTime(Currdate, vbLongTime)
theDate = Month(Now())
monthenter = MonthName(theDate)
yearenter =year(Now())

iDay = DatePart("w", Date())
SELECT CASE iDay
Case "1" strDayName = "Sunday"
Case "2" strDayName = "Monday"
Case "3" strDayName = "Tuesday"
Case "4" strDayName = "Wednesday"
Case "5" strDayName = "Thursday"
Case "6" strDayName = "Friday"
Case "7" strDayName = "Saturday"
END SELECT

host = Request.ServerVariables("LOCAL_ADDR")
page_visited = Request.ServerVariables("SCRIPT_NAME")
ipaddress = Request.ServerVariables("remote_addr")
hostname = Request.ServerVariables("HTTP_HOST")
referrer = Request.ServerVariables("HTTP_REFERER")
platform = Request.ServerVariables("HTTP_USER_AGENT")
language = Request.ServerVariables("HTTP_ACCEPT_LANGUAGE")
serversoftware = Request.ServerVariables("SERVER_SOFTWARE")
serverconnection = Request.ServerVariables("HTTP_CONNECTION")
serverprotocol = Request.ServerVariables("SERVER_PROTOCOL")
serverhttpaccept = Request.ServerVariables("HTTP_ACCEPT")
serveracceptencoding = Request.ServerVariables("HTTP_ACCEPT_ENCODING")
serverurl = Request.ServerVariables("URL")
serverport = Request.ServerVariables("SERVER_PORT")

sqlString = objConn.Execute ("INSERT INTO tracking(host, page_visited, ipaddress, hostname, referrer, platform,
languageaccept, serversoftware, serverconnection, serverprotocol, serveracceptencoding, serverurl, serverport,
strDayName, dateenter, timeenter, monthenter, yearenter) VALUES ('&_
"&host&',"&page_visited&',"&ipaddress&',"&hostname&',"&referrer&',"&platform&',"
"&language&',"&serversoftware&',"&serverconnection&',"&serverprotocol&',"&serveracceptencoding&',"
"&serverurl&',"&serverport&',"&strDayName&',"&dateenter&',"&timeenter&',"&monthenter&',"&yearenter&')")
%>
```

Figure 6.19: Tracking.inc file

```

<%@Language = VBScript%>
<!--#include file="connection.asp"-->
<html>
<head>
<title>User Details - Connection</title>
</head>
<body >
<%
strdate = request.form("monthenter")
%>
<%
Set Rs_serverconnection = Server.CreateObject("ADODB.Recordset")
Set Rs_Total_Count = Server.CreateObject("ADODB.Recordset")
Set Rs_Date = Server.CreateObject("ADODB.Recordset")

SQL_serverconnection = "SELECT serverconnection, Count(serverconnection) as count FROM
tracking"
SQL_serverconnection = SQL_serverconnection & " where monthenter = " & """" & strdate & """" & " group
BY serverconnection;"
SQL_Total = "SELECT Count(monthenter) as total_count FROM tracking where monthenter = " & """" &
strdate & """"
SQL_date = "SELECT distinct monthenter FROM tracking group by monthenter "

Rs_serverconnection.open SQL_serverconnection, objConn
Rs_Total_Count.open SQL_Total, objConn
Rs_Date.open SQL_Date, objConn

%>

<form name="form1" method="post" action="track_Connection.asp">
<input type="submit" name="Submit" value="Submit">
</form>
<%
If NOT Rs_serverconnection.EOF Then
    Rs_serverconnection.MoveFirst
    Do Until Rs_serverconnection.EOF
        %>
        <tr>
        <td valign="top" height="20" width="428" bgcolor="#EDFDFE">&nbsp;
        <font face="Arial" size="1">
        <%response.write Rs_serverconnection("serverconnection")%>
        </font>
        </td>
        <td valign="top" width="156" bgcolor="#EDFDFE">
        <div align="center"><font size="1" face="Arial">
        <%response.write Rs_serverconnection("count")%>
        </font>
        </div>
        </td>
        </tr>
        <%
Rs_serverconnection.MoveNext
    Loop
End If
%></table>
</td>
<td width="1"></td>
</tr>
<tr>
<td height="18" colspan="2" valign="top" width="120">

```

Figure 6.20: Coding for connection tracking


```

<%
SUB SelectBox(objRecordset, strName, strValue, strDisplay,intsize)
DIM strLine
strLine = "<Select name=" & strName & " id=" & strName & "size=" & intsize & _
" & ">"
strLine = strLine & "<option value=" & strValue & ">" & Chr(13) & Chr(10)
Do Until objRecordset.EOF
strLine = strLine & "<option value=" & Trim(objRecordset.fields(strValue)) & ">"
strLine = strLine & objRecordset.Fields(strDisplay) & "</option>" & Chr(13) & Chr(10)
objRecordset.MoveNext
LOOP
strLine = strLine & "</select>"
response.write strline
end sub
%>

<SCRIPT LANGUAGE="JavaScript">

<!-- Begin
if (window.print) {
document.write('<form>'
+ '<input type=button name=print value="Print Statistic" '
+ 'onClick="javascript:window.print()"> </form>');
}
// End -->
</script>

</td>
</tr>
</table>
</td>
</tr>
</table>
<p align="center"><b><font size="2" face="Arial"><a href="tracking_main.asp">
Tracking Main Page</a></font></b></p>
</body>
</html>
<!--#include file="footer.html"-->

```

Figure 6.21: Cont. coding for connection tracking

6.3.3.9 Newsletter module

Administrator can create the newsletter by using the newsletter create form. All the promotion or offers information will be submit by using the creation form and then the newsletter will be generate and sent to all the members in the newsletter.

6.3.4 Reservation Module

The reservation module also included in the member module. Members of the Easytrip.com can make their hotel reservation online through a few simple steps.

Once the member has confirmed the reservation, the email will be auto-generated and sent to the related hotel for the confirmation.

```
<!--#include file="cdonts.inc"-->

<%
===== send the user password to user =====
SUB makeReservation(sUserMail, sCheckIn, scheckOut, sRoomType, sRoomNo)
  Dim newMailObj
  Dim sMailBody

  Set newMailObj = CreateObject("CDONTS.Newmail")
  newMailObj.From = "customer-service@EasyTrip.com"
  newMailObj.To = sUserMail
  newMailObj.Subject = "Making room reservation"

  newMailObj.BodyFormat = CdoBodyFormatText
  newMailObj.MailFormat = CdoMailFormatMime
  sMailBody = "Dear," & vbNewLine & vbNewLine
  sMailBody = sMailBody & "Checkin date : " & sCheckIn & " checkout date : " & sCheckOut & " " &
vbNewLine & vbNewLine
  sMailBody = sMailBody & "Reserved Room type : " & sRoomType & " "
  sMailBody = sMailBody & "Number of room : " & sRoomNo & " "
  sMailBody = sMailBody & "Reply us as soon as possible for the customer confirmation" & vbNewLine &
vbNewLine
  sMailBody = sMailBody & "Sincerely yours," & vbNewLine & vbNewLine
  sMailBody = sMailBody & "Ching Yu Yu," & vbNewLine
  sMailBody = sMailBody & "Administrator, EasyTrip.com."
  newMailObj.Body = sMailBody
END SUB%>
```

Figure 6.22: EmailFunc to send email to the hotel for reservation

```

<%
===== Retrieve mbID and ptID from the previous page =====
    checkin = Request("checkin")
    checkout = Request("checkout")
    roomno = Trim (Request("roomno"))
    roomtype = Request("roomtype")
    dateReserve = date()
    total = Trim( Request("total"))
    dayReserve= Trim( Request("dayReserve"))

===== Retrieve hotel information from the hoteltab in database =====
    set Rs=objConn.Execute( "SELECT * FROM hoteltab WHERE (pt_ID = " &ptID&"") )
    set mbRs=objConn.Execute( "SELECT * FROM membtab WHERE (mb_ID = "&mbID&"") )
%>
    <% ipricesingle = "Rs(ht_singleroomrate)"%>
    <% ipricedouble = "Rs(ht_doubleroomrate)"%>
    <% ipricetwin = "Rs(ht_twinroomrate)"%>
    <% ipriceother = "Rs(ht_otherroomrate)"%>
    <%

===== Send Mail To The hotel Of reservation =====
makeReservation hotelmail,checkin, checkout,roomtype,roomno
%>
<Html>
<head><title>Reservation Confirm</title></head>
<body>
<table>
    <tr>
        <td width="100%" height="169" valign="top">
            <b><font face="Arial" size="2">&nbsp;</font>Your reservation is being process</font>
        </td>
    </tr>
    <tr>
        <td width="19%" ><font face="Arial" size="2"><b>&nbsp;</b>Hotel
            Name</b></font></td>
        <td width="7%">Qty</td>
        <td width="13%">Room Type</td>
        <td width="13%">Room Rate</td>
        <td width="15%">Total</td>
    </tr>
    <tr>
        <td><%=Rs("ht_name")%></td>
        <td><%=roomno%></td>
        <td><%=roomtype%></td>
        <td><%=roomRate%></td>
        <td><%=total%></td>
    </tr>
    <tr>
        <td colspan="5"><% Call AddReservation %>
    </tr>
</table>
<form method="POST" action="..member/welcome_login.asp">
    <p align="center">
        <input type="submit" value="Done" name="B1"></p>
</form>
</td>
</tr>
</table>
</body>
</html>

```

Figure 6.23: Part of coding for hotel reservation


```

<%
===== Add New partner to Database =====
SUB AddReservation

    sqlString = "INSERT INTO reservationtab " &_
    "(" & mb_ID, pt_ID, checkin_date, checkout_date, room_type, room_no, total_price, reserve_date,
    day_reserve) VALUES ( " &_
        "" & mbID & ", " &_
        "" & ptID & ", " &_
        "" & checkin & ", " &_
        "" & checkout & ", " &_
        "" & roomtype & ", " &_
        "" & roomno & ", " &_
        "" & total & ", " &_
        "" & dateReserve & ", " &_
        "" & dayReserve & " )"

    objConn.Execute sqlString

END SUB
%>

```

Figure 6.24: Sub Add reservation record into reservationtab

```

<% SUB checkinValidate
    checkin = Request("datebox")
    checkout = Request("datebox1")
    roomno = Trim (Request("roomno") )
    today = date()
    validcheckin = datediff("d", today, checkin)
    validcheckout = datediff("d", checkin, checkout)

    IF checkin = "" THEN
        errorForm "You must select the checkin date.", backpage
    ELSEIF validcheckin <= 0 then
        errorForm "You must make sure that your checkin date is later than today.", backpage
    END IF

    IF checkout = "" THEN
        errorForm "You must select the checkout date.", backpage
    ELSEIF validcheckout <= 0 then
        errorForm "You must make sure that your checkout date is later than the checkin date.",
        backpage
    END IF

    IF roomno = "" THEN
        errorForm "You must select the number of room you wish to reserve.", backpage
    END IF

END SUB %>

```

Figure 6.25: Sub Check validation for check in and check out date

```

<%
' CDONTS Constants

' CDONTS Attachment.Type values
Const CdoFileData = 1
Const CdoEmbeddedMessage = 4

' CDONTS Message.Importance Values. Also used in NewMail.Importance
Const CdoLow = 0
Const CdoNormal = 1
Const CdoHigh = 2

' CDONTS Message.MessageFormat and Session.MessageFormat Values
Const CdoMime = 0
Const CdoText = 1

' CDONTS NewMail.AttachFile and NewMail.AttachURL EncodingMethod Values
Const CdoEncodingUUencode = 0
Const CdoEncodingBase64 = 1

' CDONTS NewMail.BodyFormat Values
Const CdoBodyFormatHTML = 0
Const CdoBodyFormatText = 1

' CDONTS NewMail.MailFormat Values
Const CdoMailFormatMime = 0
Const CdoMailFormatText = 1

' CDONTS Recipient.Type Values
Const CdoTo = 1
Const CdoCc = 2
Const CdoBcc = 3

' CDONTS Session.GetDefaultFolder Values
Const CdoDefaultFolderInbox = 1
Const CdoDefaultFolderOutbox = 2
%>

```

Figure 6.26: Cdont.inc file

```

'===== Create the connection object to the database =====
<%
set objConn= Server.CreateObject("ADODB.Connection")
DSNtemp="DRIVER={SQL SERVER}; SERVER=pc; UID=sa; PWD=; DATABASE=ETIS database"
objConn.open DSNtemp
%>

```

Figure 6.27: Connection.asp

```

===== CursorTypeEnum Values =====
Const adOpenForwardOnly = 0
Const adOpenKeyset = 1
Const adOpenDynamic = 2
Const adOpenStatic = 3

===== CursorOptionEnum Values =====
Const adHoldRecords = &H00000100
Const adMovePrevious = &H00000200
Const adAddNew = &H01000400
Const adDelete = &H01000800
Const adUpdate = &H01000800
Const adBookmark = &H00002000
Const adApproxPosition = &H00004000
Const adUpdateBatch = &H00010000
Const adResync = &H00020000
Const adNotify = &H00040000
Const adFind = &H00080000
Const adSeek = &H00400000
Const adIndex = &H00800000

===== LockTypeEnum Values =====
Const adLockReadOnly = 1
Const adLockPessimistic = 2
Const adLockOptimistic = 3
Const adLockBatchOptimistic = 4

===== ExecuteOptionEnum Values =====
Const adAsyncExecute = &H00000010
Const adAsyncFetch = &H00000020
Const adAsyncFetchNonBlocking = &H00000040
Const adExecuteNoRecords = &H00000080

===== ConnectOptionEnum Values =====
Const adAsyncConnect = &H00000010

===== ObjectStateEnum Values =====
Const adStateClosed = &H00000000
Const adStateOpen = &H00000001
Const adStateConnecting = &H00000002
Const adStateExecuting = &H00000004
Const adStateFetching = &H00000008

===== CursorLocationEnum Values =====
Const adUseServer = 2
Const adUseClient = 3

===== EditModeEnum Values =====
Const adEditNone = &H0000
Const adEditInProgress = &H0001
Const adEditAdd = &H0002
Const adEditDelete = &H0004

===== GetRowsOptionEnum Values =====
Const adGetRowsRest = -1

```

Figure 6.28: Part of adovbs.inc file

Chapter 7

System Testing

Chapter 7 System Testing

System testing is executed after the system implementation. Whatever is implemented in the system should be tested thoroughly to ensure that the system is doing and producing the perceived output.

Testing objectives:

- to detect the presence of errors in the system developed.
- To execute a program with the intent of finding an error.
- To perform unit and integration testing to validate the requirement specification.
- To perform system testing in order to verify the system design, and to make sure that all system design aspects are correctly implemented to meet an acceptable level of reliability and efficiency.

7.1 Defect Testing

There are two approaches to defect testing in ETIS backend system:

- (1) Functional / Black Box testing where the tests are derived from the program specification
- (2) Structural / White Box testing where the tests are derived from knowledge of the program's structure and implementation.

7.1.1 White Box Testing

White box testing involves the structures of the code directly. This testing was carried out at the early stage of the testing process to ensure that the internal operations of the system perform according to specification. This is intended to exercise or test the

internal structure of the software. It derived its test from the knowledge of the program's internal structure.

White box testing ensures that:

- (1) All independent paths within a module have been exercise at least once.
- (2) All logical decisions are executed on both the true and false side.
- (3) All loops are executed at their boundaries and within their operational sounds.
- (4) All internal data structure are exercised to ensure their validity.

7.1.2 Black Box testing

Black box testing assumes that the logic structure of the code is unknown. It is a "black box". This is the point at which the function of a module is tested. This testing was used during the later stage of the testing process.

It is not an alternative to white box testing. It is complementary approach that can uncover a different class of errors from those uncovered by using white box testing.

Black box testing has found:

- (1) Missing / incorrect function
- (2) Internal error
- (3) Error in data structure / external database access
- (4) Performance error
- (5) Iniliazation / termination errors

7.2 Testing Strategies

Coding and testing are carried out in parallel. The approach chosen to guide integration affects both the progression of the coding and the scheduling of testing activities. The levels of testing include:

- ❖ Unit / Module testing – test if the individual modules meet the required specifications and are correctly coded.
- ❖ Integration testing – tests if all the modules (when integrated) work correctly. This ensures that the modules are correctly interfaced.
- ❖ Function testing – tests if all the functions required by the application and specified in requirements specification document are working properly.
- ❖ Performance testing – tests if the performances of the systems meets the required specifications (i.e., the non-functional requirements)
- ❖ Acceptance testing – tests if the systems can be accepted for production (operation)
- ❖ Installation testing - tests if the system works correctly in the real environment, i.e., the customers premise. This is not necessary if the system is developed in the using place.

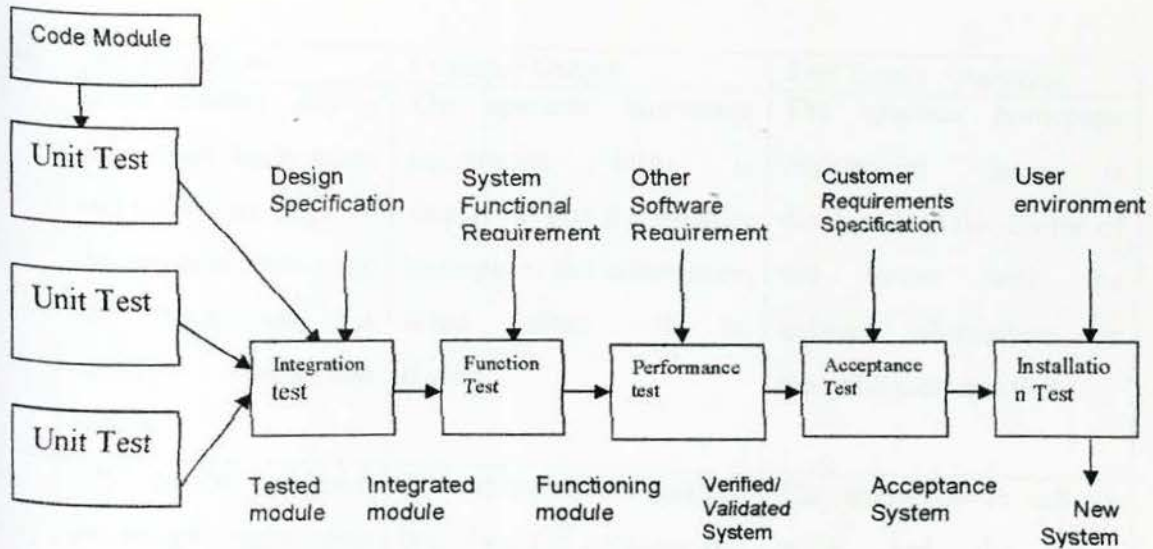


Figure 7.1: Levels of testing

7.2.1 Unit Testing

Tests individual components, to ensure that they operate correctly, these components include functions and subroutines. Each component is tested independently without the other system components.

In the development of ETIS backend system, unit testing was done after the development of each of the component and not at the end of development of whole systems.

7.2.1.1 Epartner Module – Create / Modify Epartner homepage testing

The epartner module provides the ability to insert, update and view the partner homepage record. Unit testing was carried out on each function once it was completed. If it was tested to be functioning correctly, development of next function was carried out. Else, debugging was carried out to identify the error before having it tested again.

Step	Test Procedure	Expected Output	Test Result Analyzing
1	Select epartner , key in the partner login name and password, login to the epartner main page and click on the modify homepage button.	The epartner homepage registration form is displayed. For the existing homepage, the information filled before will be display.	The epartner homepage registration form is displayed at the center of the screen with the existing information for the particular epartner.
2	Fill in the epartner homepage registration form and click on the submit button.	The information is inserted into the ETIS database and a success message will be display. If there is any compulsory field blanked, then the error message will be displayed.	The username is left as blank and the error message will be displayed at the center of the page. While all the compulsory fields are filled, the data is inserted successfully and the partner is informed by a success message at the center of the screen.

Table 7.1: Unit testing - Create / Modify Epartner homepage testing

7.2.1.2 Member module – Login function testing

The member module provides the login function for the user to login as a member to view their own reservation record, shopping cart and process order. They also able to make the hotel reservation and tour package booking after login as a member. If the member provide the correct username with the matched password, then he will be able to logon to the member main page, else the error message will be displayed.

Step	Testing procedure	Expected output	Test Result Analyzing
1	Key in the member login name and password, click on the login button.	The member will be able to login to their respective account if the correct username and password are provided. Else the error message will be prompt out.	Log into their respective account with their name returned on the top of the menu.

Table 7.2: Unit testing – Login function

7.2.2 Module Testing

A module is a collection of dependent components. A module encapsulates these related components. Module testing cover a wider range of testing than unit tests. It will take a module and test out for beginning of the modules till the end of it and the result or output will be compared with the expected result.

7.2.2.1 Member module testing

After the user register as a member with Easytrip.com and log into their personal account, they are able to update their personal information, change their password and crack their account password in case they have forgotten their account password. They also can choose to cancel their account if they wish to do so.

Member module test is carried out to ensure that all the member’s particulars are updatable (except memberID). Their password can be changed and their account can be terminated anytime if they wish to do so.

Step	Test procedure	Expected outcome	Test result analyzing
1	Key in the member login name and password, click on the login button, after login to the personal account, click on the update personal info button	The update personal information form will be displayed at the center of the screen, with the member's existing information.	Member information displayed on the update form and enable the member to update their record by change their record and click the 'update' button to save the new record into the ETIS database.
2	Click on the change password button, key in the member login name, old password, new password and confirm new password.	Enable the member to change their password and then login to their account with the new password.	Error message will be prompt out if the login name does not exist, or the old password does not match. Success message will be displayed to inform the member that the password has been successfully updated
3	Click on the forget password button, key in the member login name, first name, last name, email address, and the birthday to crack their account password.	The email with the account password will be sent to the member's email account if all the information provided are correct.	The error message will be displayed if any of the columns is filled with the incorrect info. The success message will be displayed to inform the member that the password has been sent to their account.

4	Click on the cancel membership cancellation button.	Enable the member to cancel their membership and their account information.	Member cannot log into the account with the deleted member login username.
---	---	---	--

Table 7.3: Module testing - Member module

7.2.2.2 Partner module testing

After the ePartner homepage records has been completed and inserted into the database successfully, module testing was carried out to ensure all the record inside the database is updatable.

Step	Test Procedure	Expected outcome	Test result analyzing
1	Click on the new epartner registration.	The new epartner registration form will be displayed on the center of the screen.	The new epartner registration form is displayed.
2	Fill in the registration form and click the submit button.	The data will be stored into the ETIS database and a success message will be displayed.	The error message will be prompt out if the user left out any compulsory field or fill in the invalid email address or existing username.
3	After the new epartner registration successfully, the user will be continue with the setup homepage by click on the submit button.	The new homepage registration form will be displayed on the center of the screen.	The homepage registration form will be displayed according to the service category selected by the epartner.
4	Fill in the homepage creation wizard and click	The data will be inserted into the database, and	Record is inserted successfully and the

	the submit button	success message will be displayed.	epartner will be informed with a success message.
5	Click on the edit homepage button. Edit the certain column and click the submit button.	The record is updated successfully.	Record updated successfully and the epartner will be informed by a success message.

Table 7.4: Module testing – Epartner module

7.2.3 Integration testing

In some system, some module might work as an individual module without any linkage to other modules but there are some modules where they most integrate with other module to perform its function. This integration is planned and coordinated so that when a failure occurs, we have some idea of what caused it. Therefore, integration testing involves testing a collection of modules that are integrated together.

7.2.3.1 Tour package module, train module, flight module and administrator module testing

For ETIS backend system, all modules are tested together by using sample data to ensure all the modules can be integrated properly. Administrator is given privilege to update the tour package, train and flight schedule besides of generating the newsletters and reports.

For the tour package management, administrator can choose to add new package, update the existing package, delete the expired package, generate the reminder to send to the member who booked the tour package and also show the order process for the particular tour package.

Step	Test Procedure	Expected output	Test Result Analyzing
1	Fill in the administrator login name and password, click on the manage tour button under the management category.	Proceed into the administrator main page, and the list of existing tour package will be shown at the center of the screen according to the alphabetical order.	Proceed successfully into the administrator main page, table consists list of existing tour package displayed at the center of the screen.
2	Click on the add package link at the bottom of the table.	The add new tour package form will be displayed at the center of the screen.	Add new tour package form displayed at the center of the screen.
3	Fill in the add new tour package form and click the add tour button on the bottom left of the table.	The success message will be displayed if the tour package been added successfully into the database.	The success message shown at the top of the table and the new tour package name also been shown in the list of the tour package.
4	Click on the link of the tour package, edit the information and click the update tour button.	The update tour package form will be displayed.	The update tour package form displayed at the center of the screen with the complete tour package information according to the package ID selected. The success message displayed after the information has been updated in the database.
5	Click on the reminder link at the tour package	The message will displayed if there is any	The message show that the notification have

	management main page.	notification is generate for the member regarding to their tour package booked.	been sent to the related member's email account due to the expired date of the tour package booked.
6	Click on the process order link on the tour package management main page.	The process order page will be displayed and the process order for each tour package will be present.	The process order table shown at the center of the page with the list of the status for process order.
7	Click on the delete tour package link on the tour management main package. Select the tour package wish to delete by clicking on the link of the related tour package. Click on the confirm delete button to delete the tour package.	The delete tour package page will present. After click on the confirm delete button, the success message will be shown.	The delete tour package page with the tour package information displayed, after click on the confirm delete button, the success message displayed to notify that the tour package has been deleted from the ETIS tour package.

Table 7.5: Integration testing – tour package, train, flight and administrator

7.2.3.2 Reservation Testing

The accommodation reservation module involves the hotel partner record, member record and the reservation record as well. These three sets of records will be integrated together to perform the reservation process.

Step	Test Procedure	Expected Outcome	Test analyzing
1	Click on the "book" button on the hotel main page. Fill in the reservation form and click on the "Submit" button.	A reservation form will be displayed required the user to choose the check in date, checkout date and no of room needed.	The hotel reservation form exhibit at the center of the screen. Error message prompt out if the invalid check in date or invalid checkout date been inserted.
2	Select the room type wanted and click the submit button, click the confirm button after ensuring that all the data are correct, or click the cancel button to cancel the reservation.	The page with all the reservation details and member's contact information will be displayed, if the user chooses to confirm the reservation, the reservation will be sent to the related hotel and the member will be informed by a message.	The reservation details shown at the table and member can choose to update their personal information if there is any change. The reservation is cancelled when the member click on the cancel button. The reservation details sent to the related hotel after the member click on the confirm button.

Table 7.6: Integration testing – Reservation

7.2.4 System testing

Testing the system is very different from unit and integration testing. Testing the system need to work with the entire development environment. This will cover testing for whole ETIS backend system. It test the time from the time the epartners, members or administrator login into their page, the modules they access and until they log out of the system.

System testing is concerned with finding errors, with result from unanticipated interactions between sub systems and system components. It is also concerned with ensuring that the system meets its functional and non-functional requirements. . Once the entire system is validated, it must also be combined with other system elements such as hardware, end user and the database. System testing verifies that elements are functioning properly and the overall systems and objectives are achieved, which in this case, backend system for ETIS must achieve speed, reliability, robustness, security, inter- operability, user friendliness, efficiency, accuracy, flexibility and modularity.

System testing was carried out by using usability test. This test is a list of illustrating the kinds of considerations that have been tested and the test result analyzing with the help from the 5 non-computer base testers and 5 computer based testers.

No	Considerations	Test Result Analyzing
1	Has each user interface been tailored to the intelligence, education background and environmental pressures of the end users?	About 70 % of the testers do not face any problems in using the system. However, 30% of the testers found difficulties to understand the process of the administrator modules. Most of them are not from the non-computer based background. This may be caused by the administrator module is much trickier and required more basic computer knowledge in

		order to handle it. Could be concluding that the system is not only tailored well to the intelligence end user. Nevertheless, the administrator module still needs some one who is more familiar with the administrative tasks to handle it.
2	Are the outputs from the system meaningful, non-abusive, devoid of "computer gibberish" and so on?	80 % of testers agreed that all the outputs of the system are meaningful and proper labeled. The information include in the email to the user and epartner also enough. 20% of the testers feel that the outputs still can improve, especially in the output design.
3	Does the total set of user interface exhibit considerable "conceptual integrity, an underlying consistency and uniformity of syntax, conventions, semantics, format, style and abbreviations.	80 % of the testers think that the user interface of the system are consistent while 20 % of the testers think that the interface less attractive may be due to the color combination been used. It can be conclude that the testers are satisfied with the consistency of the user interface, except the interface design are not professional enough.
4	Is the system easy to follow or use?	All testers agreed that the system is easy to use, and some of them even think that the system is too simple and easy to use. This may be due to the system flow that make the users can follow the steps easily. It can be concluded that the system is easy to use.

Table 7.7: System testing

Chapter 8

System Evaluation & Conclusion

Chapter 8: System evaluation and conclusion

System evaluation is a process of evaluating the developed system, by identifying the system strength, system limitations and future enhancements. It also highlights the knowledge gained and the problem encountered during the development of the ETIS backend system. It also includes the solution taken to overcome these problems.

8.1 Problems encountered and the recommended solutions

8.1.1 No preceding experience in the programming languages

Due to prior inexperience in VBScript and VB, ASP scripting was written in VBScript, there was a learning curve in understanding how the ASP objects work. Scripting in a new environment such as ASP requires some knowledge of what the ASP objects do and how to use the objects to build the required functionality of the web application. These objects are the server components made available by IIS. The best way of learning ASP scripting during this project was going through some of the ASP examples available on the ASP reference books, Internet and also Microsoft's web site. Those examples are simple and easy to understand how ASP works within IIS.

8.1.2 Determine scope of the system

Since there was no prior experience in developing a system, it was difficult to determine to which extent to define the scope of the system so that it can be completed within the given time frame. However, this was overcome by analyzing and studying all of the capabilities that Visual Basic 6.0 and ASP technology can do before determining the scope of the system.

8.1.3 Time Constraint

During the design phase, there was not enough time to study and produce the best solution of design in Semester 1. Two of the main programming language I have to study is VBscript and ASP. Mainly, this was due to inexperience and insufficient knowledge of designing a system. The best way to learn is to read as many approaches used in previous year students' report documentation

8.1.4 Problems on Installation

There were a lot of problems on installing and configuring Windows 2000, IIS and other tools before starting coding. The needed software and tools were successfully installed only after a few times of formatting and reinstallation. From experience, it is essential to know the sequence of products installations. This is to ensure smooth execution without system errors. This vital information about installation sequence is not provided in a user-friendly way to guide user.

8.1.5 Not fully supported by different browser

The appearance of web pages is different on Internet Explorer 5 and Netscape Navigator and Communicator during the testing phase, such as different positioning of graphics, text, and tables on these web browsers. The main cause of these problems couldn't be detected.

8.1.6 Slowly speed of retrieving data from database

While more than one user connects to the database, the speed of retrieving data from database will slow down. This is because Microsoft Access not fully supports multiple users. System will hang sometime because the locking options block the user to retrieve data from database. As a suggestion solution, enhance the database management system to SQL server.

8.2 System strength

8.2.1 Upload images feature

The administrator can choose the images for the tour package. The image files will be stored as binary data in the database, and it will be displayed at the front end as the description for the related tour package.

8.2.2 Self – maintaining features

Epartner module is one of the most important modules in the ETIS backend system. In order to maintain and control the records on the large amount of partners, this system is designed to allow the partner to update or edit their own information by accessing to their account. This feature will apply to Hotel, Restaurant, Bus Company and Car Rental Company epartner. They also can choose to modify their homepage layout, like the background color, heading color, font color and the column color as well.

8.2.3 Administrator control

Administrator control plays an important role in the ETIS backend system. This module besides provides the feasibility for the administrator to perform the administrator tasks, it also cover almost every part of the database in order to update and delete the necessary data when it is required to do so. In this system, administrators are allowed to access and maintain all partners record, member's record, currency record, tour package, feedback, create e-report and newsletter.

8.2.4 Filter up the unnecessary data before processing

One of the strength of the ETIS backend system is its ability to filter up the unnecessary data before display it on the screen. For example, the newsletter module can filter up the member list who wishes to receive the newsletter. Only the active members in the newsletter list will receive the newsletter.

8.2.5 Update and delete cascading

The ETIS backend system enables the update and deletes cascading function. When user try to update or delete certain record, integrity constraints will be enforced automatically by table triggers that free user from the need to understand the architecture of the server database.

8.2.6 Authorization and authentication

Every user has its own unique ID, login name and password. ETIS backend system only allows the authorized users to access to their account accordingly, further more; it has the capabilities of preventing authorized users from accessing the partner account or the

member account. An invalid login message will be displayed if the user tries to login with an invalid login name or mismatch password.

8.2.7 Graphical User Interface (GUI)

ETIS backend system is developed on the principle of that it's easy to use and to provide a fully module and administrator in the administrator module. By implementing good GUI, they are able to perform their tasks easier with more understanding about what they are doing.

8.2.8 Informative message

Every prompt out message, either the success message or the error message is written with the clear and easy understanding sentences. This will help the user to understand the instruction and know what to do with the information.

8.3 System Limitation

8.3.1 Does not include epartner from other countries

The EasyTrip Travel Information System is only concentrated in the local travel destination and local travel members. It will not include any other countries other than Malaysia. The members only can get the information about the hotels, restaurant and transportation information within Malaysia.

8.3.2 Cannot provide instant confirmation for the hotel reservation

The hotel reservation services cannot provide the instant confirmation for our members. This is due to our system is making the reservation to the hotels via email or manual processing. We have to wait the reply from the hotel before we give the confirmation to our members.

8.3.3 Does not include the flight and train ticket booking

Easytrip.com does not provide the online flight or train tickets booking because we do not have agreement with the flight or train company. We also do not include all the schedule due to the large storage of data.

8.3.4 Does not include all local hotel, restaurants and transportation

The ETIS does not include all the local hotels, restaurants and transportation information of Malaysia due to the large storage of data. Besides, there is a difficulty in searching some restaurants and hotels information for the other states in Malaysia.

8.3.5 Tour Package do not cover traveling destination out of Malaysia

The tour packages offered in the entire ETIS only cover the traveling destination in Malaysia.

8.4 Future Enhancement

8.4.1 Include more business in epartner module

In the entire epartner module, we only include the hotels, restaurants, car rental company and bus company. We shall expand our epartner scope to the other industries such as

The shops for the traveling equipment and the shops sold the local products. This will makes the travelers more convenient and they can gathered more information from our sites.

8.4.2 Provide ability to make instant reservation

We'll find the solution to provide the instant confirmation for the hotel reservation for our members. This maybe achieve if we have agreement with the hotels or we can directly link to their hotel database. Instant confirmation will makes the system more user friendly and efficiency.

8.4.3 Provide more administrator task

We'll include more administrative tools for the web maintenance and management. The analysis tools can be included to analyze the performance of the web. This will help to improve the sites.

8.4.4 Database Enhancement

Increase the database storage capability in order to keep more data. This will help to make our site more informative, and keep our information up to date.

8.4.5 Provide wireless booking

Wireless booking is one of the new trends in this generation and the WAP user is increased from day to day.

Provide wireless booking for WAP users will makes our system more user-friendly and more convenient. The WAP users can do their online booking wherever and whenever they wish to do so.

8.4.6 Provide online booking for bus, train and flight services

We hope to include the online booking for the bus, train and flight services. This will provide the more completely services for our members.

8.4.7 Cover the tour package for more countries

Our entire tour packages only include the traveling destination in Malaysia. In future, ETIS hope to cover more countries and traveling destination in our tour packages. For example, the traveling destination in Asia.

8.5 Project Conclusion

Development of the **Easytrip Travel Information System (ETIS)** starts from the first semester of third year and finished at the end of the second semester.

The first stage of the development is the literature review which focuses on the background study about the information and knowledge, which are needed to develop the project. It makes review on the existing project and makes comparison among the developed-projects. The strengths and weakness of the existing projects will give a general review on how to improve the weakness and reduce the risk of the project if possible. There are some problems encountered during the literature review, the approach for the information regarding the online-transaction method is difficult since the electronic payment method is still new in Malaysia. There are also difficulties in capture the user requirements and their expectation from the system. However, I have found the solution for the problems by the resource from senior, web referring and course mates.

During the implementation of the **EasyTrip Travel Information System (ETIS)**, several technical problems have encountered, such as the problem of configuration of the Internet Information Server, and the configuration of the Windows NT, to setup the system and make sure that the system can be running in a reliable platform.

While programming skills are essential, good practice on software engineering techniques must also be applied efficiently. This project has provided the golden chance to experience using the techniques, paradigms, and approaches learned from System Analysis & Design and Software Engineering courses in the second year and third year study respectively.

This system encompasses its own strengths and it also include some limitation due to the lack of experience and sources.

I have gain a lot of knowledge and information from this final year project, especially in programming, database and system configuration. All this experience will not be learn through the text book and it is appreciated.

As mentioned before, the system scope was defined through prototyping model. This makes the system most expandable in terms of functionality. Enhancement could still made to the system with more features added.

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Appendix

Appendix (I)

Question for interview with the travel agency

1. What are the services provided by a travel agency?
2. What is the information required by the travelers who travel in Malaysia?
3. What is the field of interest for the most travelers in Malaysia (for example: place of interest, local food?)
4. What are the customers mostly complaint to the travel agency?
5. Does the travel agencies provide the tourist guide to the travelers?
6. Does the travel agency have it own web site? If yes, then what are the features in the web site?
7. If no, are they interest to publish their travel agency online?

Appendix (II)

Questionnaire for EasyTrip Travel Information System

Age:

Occupation:

Gender:

Section A:

Yes No

- 1) Have you been using Internet before? If No, proceed to Section B ☐ Yes ☐ No
- 2) Frequency of using Internet
☐ 1-5 times per month ☐ 6-10 times per month ☐ >10 times per month
- 3) Purpose of using Internet
☐ Entertainment ☐ News ☐ Educational
☐ Chatting ☐ Research ☐ E-mail
☐ E-commerce
- 4) Where do you usually connect to the Internet?
☐ Home ☐ Office ☐ School
☐ Cyber Cafe ☐ Others
- 5) Have you been visit to any homepage for travel agency either local or foreign country in the Internet before? ☐ Yes ☐ No
- 6) Do you satisfy and feel that the information which are provided by any online travel agency is sufficient? ☐ Yes ☐ No
If not, please state out the reasons.
(can choose more than one)
☐ Not enough information ☐ The interface is not attractive
☐ The instruction of the system is not clear ☐ The system is not interactive
☐ Too many information is crowded in one page
☐ Too many procedures required while making reservation
- 7) Do you think that travel agency need to provides services such as analysis on hotels and restaurants? ☐ Yes ☐ No
- 8) In your opinion, what facilities provide convenience to traveler?
(can choose more than one).

- | | |
|--|---|
| <input type="checkbox"/> Online reservation | <input type="checkbox"/> Online payment |
| <input type="checkbox"/> Online inquiries | <input type="checkbox"/> The most updated information |
| <input type="checkbox"/> Map | <input type="checkbox"/> Transport schedule |
| <input type="checkbox"/> Able to plan a trip within the budget that is given by the traveler | |
| <input type="checkbox"/> Others, please specify _____ | |

9) What kind of e-payment system do you prefer as a traveler?

- | | | |
|-------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Cash | <input type="checkbox"/> Credit card | <input type="checkbox"/> Check |
|-------------------------------|--------------------------------------|--------------------------------|

10) Do you need a help system or FAQ on a travel agency system? ☐ ☐

11) Do you willing to receive newsletter for special deals by travel agency? ☐ ☐

12) Do you trust online reservation for hotels and transportation? ☐ ☐

13) Will you purchase the online travel insurance? ☐ ☐

Section B

14) Do you feel inconvenient when you have to go to several places such as travel agency and car rental company to make reservation before going to a trip? ☐ ☐

15) Do you need a tourist consultant during your trip? ☐ ☐

16) How do you obtain information about places of interest in Malaysia?

- | | |
|--|--|
| <input type="checkbox"/> Leaflet | <input type="checkbox"/> Relatives and friends |
| <input type="checkbox"/> Contact travel agency | <input type="checkbox"/> Internet |
| <input type="checkbox"/> Magazines and newspaper | <input type="checkbox"/> TV/radio |

17) As a traveler, what kind of package do you prefer?

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Tour package | <input type="checkbox"/> Tailor made package |
|---------------------------------------|--|

18) Please choose the information that you are interested if you are a traveler?

- | | |
|---|---|
| <input type="checkbox"/> Accommodation (hotels) | <input type="checkbox"/> Places of interest |
| <input type="checkbox"/> Foods (Restaurants) | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Others, please specify _____ | |

19) Kindly attach any suggestion about web-based travel agency system

Appendix (III)

User Manual

Member Module

The screenshot shows the 'Member Login' interface. At the top, there is a green banner with the text 'Member Login'. Below the banner, the text 'Please login now.' is displayed. A link 'click here to register' is provided for new users. The login form consists of two input fields: 'login name:' and 'password:'. Below the password field, there are three links: 'change password', 'forget password', and 'membership cancellation'. A 'Login' button is located below the links. Numbered callouts 1 through 7 point to specific elements: 1 points to the 'click here to register' link, 2 points to the 'login name:' input field, 3 points to the 'password:' input field, 4 points to the 'membership cancellation' link, 5 points to the 'Login' button, 6 points to the 'change password' link, and 7 points to the 'forget password' link.

Figure 1: Member Login Main Page

1. Link to the new member registration form
2. Fill in the login name
3. Fill in the password match with the username
4. Link to the membership cancellation page
5. After fill in the login name and the password, click the "login" button to submit the information to the member main page
6. Link to the change password page
7. Link to the forget password page to crack the password



Figure 2: Member welcome main page

1. Click the "GO" button to update the personal information
2. Click the "GO" button to view the personal information
3. Click on the [Log out](#) link to log out from the member account
4. Click on the [view hotel](#) link to view the epartner hotel list.
5. Click on the [view reservation record](#) to view the member previous reservation record
6. Click on the [cancel and refund policy](#) link to view the page

view info

update weilun information

username	weilun
first name	ching
last name	wl
birthdate	3 - Feb - 1987
email	<input type="text" value="weilun@hotmail.com"/>
street name	<input type="text" value="jalan indah"/>
city	<input type="text" value="sitiawan"/>
state	<input type="text" value="perak"/>
zip code	<input type="text" value="32000"/>
telephone no	<input type="text" value="056917552"/>
fax no	<input type="text" value="056925556"/>

```
graph LR; subgraph ContactInfo [Contact Information]; email; street_name[street name]; city; state; zip_code[zip code]; telephone_no[telephone no]; fax_no[fax no]; end; ContactInfo --> Circle1(( )); update_button[update] --> Circle2(( ))
```

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Figure 3: Update personal information page

1. Only the contact information can be updated, the others basic information such as username, firstname, lastname and birthdate are not updatable.
2. After edit the information, click the "update" button to send the information for the further processing

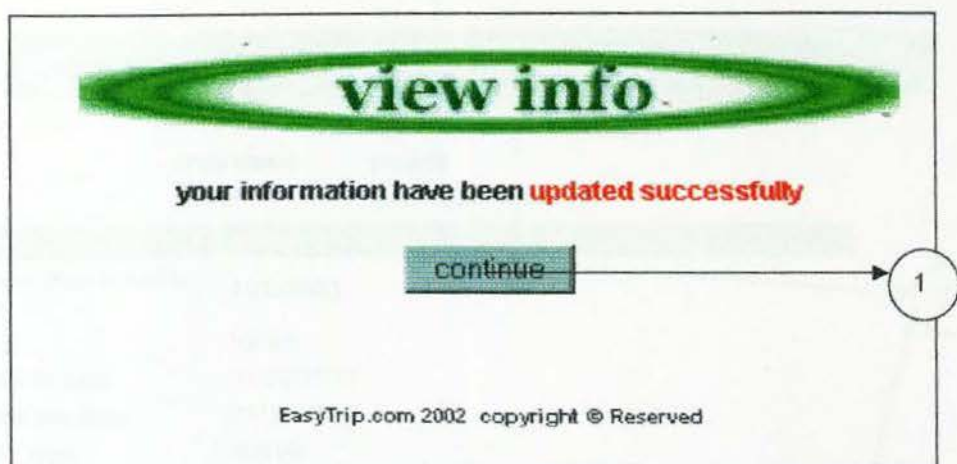


Figure 4: Success message if the personal information is updated

1. Click on the "continue" button to proceed to the member main page for others process.

Reservation history

Username **weilun**
Email **weilun@hotmail.com**

Status:	active	
Reservation making date:	1/20/2003	1
Hotel	Helen	
Check in date	01/30/2003	modify
Check out date	01/31/2003	
Room type	double	
Total Price	RM 654	
Status:	pasive	
Reservation making date:	1/4/2003	2
Hotel	qian	
Check in date	01/15/2003	
Check out date	02/02/2003	
Room type	double	
Total Price	RM 546	

Figure 5: Member Reservation History

1. Only the reservation with the status active will display the “modify” button to edit the reservation details
2. The reservation with the passive status will not display the “modify” button.

The image shows a web form titled "Modify Reservation" with a green header. The form contains the following fields and options:

- Hotel Name: Helen
- Hotel Address: askjdhtl hdjkhf afjdhtlakjht ,56450 ,Kedah
- Hotel Telephone No: 072187789
- Reservation Make Date: 1/20/2003
- Check in Date: 01/30/2003 (with a calendar icon)
- Check out Date: 01/31/2003 (with a calendar icon)
- Room Type: double (dropdown menu)
- No of Room: 1 (dropdown menu)

A bracket labeled "1" groups the Check in Date, Check out Date, Room Type, and No of Room fields.

Below these fields is a green bar containing the text: "OR ☐ Yes, I wish to **cancel** this reservation". An arrow labeled "2" points to the checkbox.

Below the green bar is a "Submit" button. An arrow labeled "3" points to the button.

At the bottom of the form, the text "EasyTrip.com 2002 copyright © Reserved" is displayed.

Figure 6 : Modify reservation page

1. The field that can be edit in the modify reservation information.
2. Click on the check box to cancel the reservation
3. Click on the "submit" button to submit the information to the next page

forget password

Please enter the related information to retrieve your password :

All field are needed:

username	<input type="text"/>
first name	<input type="text"/>
last name	<input type="text"/>
email address	<input type="text"/>
birthday	Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>

Reset Submit

1

2

3

Figure 7: Member's forget password page

1. All the fields are compulsory to crack the password
2. Reset button to reset all the information
3. Submit button to submit the information for further process

forget password

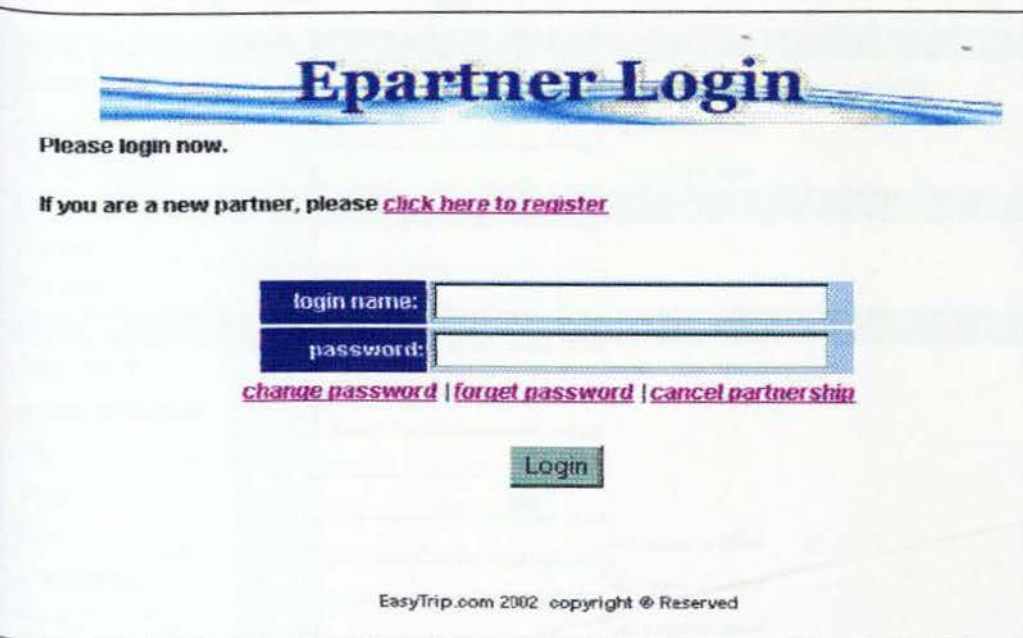
Dear beehui

Your password has been sent to your email address : bhui@hotmail.com

Figure 8: Member's forget password page II

1. The success message will be displayed and the password will be sent to the member's email add

2. Epartner Module



The image shows a web page titled "Epartner Login". At the top, the title is in a large, bold, blue font with a decorative blue wave-like underline. Below the title, the text "Please login now." is displayed. Further down, a message states "If you are a new partner, please [click here to register](#)". The login section contains two input fields: "login name:" and "password:", each with a corresponding text box. Below these fields are three links: [change password](#), [forget password](#), and [cancel partnership](#). A "Login" button is positioned below the links. At the bottom of the page, the copyright notice "EasyTrip.com 2002 copyright © Reserved" is visible.

Epartner Login

Please login now.

If you are a new partner, please [click here to register](#)

login name:

password:

[change password](#) | [forget password](#) | [cancel partnership](#)

Login

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Figure 9: Epartner Login Main Page

Epartner Registration

Create your own username and password

Username	<input type="text"/>	* special character like @#\$%^&* are not acceptable
Password	<input type="password"/>	* maximum 12 characters
Confirm password	<input type="password"/>	* reenter your password

Personal Information

First name	<input type="text"/>	*
Last name	<input type="text"/>	*

Contact Information

Email address	<input type="text"/>	*
Address (street name)	<input type="text"/>	
City	<input type="text"/>	
State	<input type="text"/>	*
Zip code	<input type="text"/>	only numbers are allowed
Telephone No.	<input type="text"/>	only numbers are allowed
Fax No.	<input type="text"/>	only numbers are allowed
Service categories	<input type="text"/>	*
Date Entry	<input type="text" value="1/21/2003"/>	

☒ Yes, my email account can receive HTML email

all field with * are compulsory

Read and accept the e-partner [Terms and Condition](#)

☐ Please check here to indicate that you have accept the e-partner Terms and condition

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1

2

3

4

Figure 10: New Epartner registration page

1. Click on the link to the terms and condition page
2. Click the checkbox to indicate that the user agree with the terms and condition
3. "Clear" button to reset all information
4. "Submit" button to submit the information

Username	geeith
First name	ching
Last name	geeith
Email address	geeith@hotmail.com
Address (street name)	28, Taman Indah Muhibbah
City	Sitiawan
State	Perak
Zip code	32000
Telephone no.	056917552
Fax no.	056918553
Service Category	Hotel
Date entry	1/21/2003

edit Submit

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1 2

Figure 11: ePartner registration validation

1. "Edit" button to return to the epartner registration page
2. Submit button to confirm the information

Welcome

welcome, geeith

click here to continue to setup your company homepage

Submit

1

Figure 12: Welcome page for the new epartner

1. Click the "Submit" button to proceed to the create homepage form

hotel

all fields with * are compulsory

Hotel's brief description

Hotel name

Hotel contact person

Hotel email

Hotel phone no

Hotel address (street name)

City

Zip code

State

Fax no.

Hotel web site

Hotel rating

Hotel introduction

Hotel facilities

Room's description

No of single room

Room rate of single room

No of double room

Room rate of double

No of twin room

Room rate of twin room

No of other room

Room rate of other room

Page Layout

Heading Color

Column Color

Background Color

Font Color

Figure 14: Hotel epartner homepage creation page

1. User have to fill in the form, all the fields with the * symbol are compulsory and must be filled in
2. "Reset" button to reset all the information in the form
3. Click the "submit" button to submit the information

The Eastin Hotel

Introduction

We provide the most valuable room rental rate in the town with the various room type for your choice. We also include the most completely service and you can find what you need here. Click on our web site to find more about us. We are looking forward to serve you!

Facilities

We includes the swimming pool, sauna, gym room, tennis and badminton court, meeting room. We also provide the information about the car rental services and lobby services. Contact us for further information.

Contact information

Email add: admin@eastin.com.my

Telephone no: 056549875

Fax no: 053218545

Address: 054568975, Sitiawan
32000, Perak

Website url: www.theeastin.com

Room Type and Room rate Provided

Room type	Room No	Room rate
single room	120	RM 125.00
double room	80	RM 188.00
twin room	50	RM 220.00
other room	30	RM 280.00

edit

ok

1 Figure 15: Hotel main page preview

2

1. Click the "edit" button if any information is incorrect and need to be change
2. Click the "OK" button to confirm the information

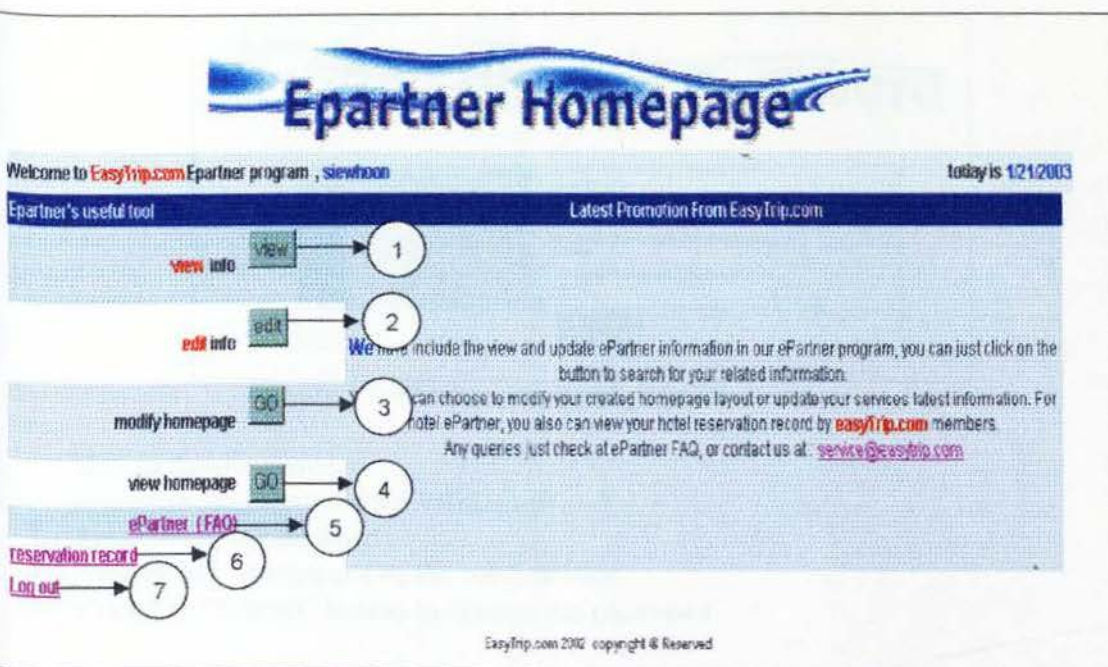


Figure 16: Epartner Homepage

1. Click the "view" button to view the epartner information
2. Click the "edit" button to update the epartner information
3. Click the "GO" button to modify the epartner main page information and layout
4. Click the "GO" button to view the epartner main page
5. Link to the epartner help desk – Frequently Ask Question (FAQ)
6. Click on the reservation record to get the report for the reservation (This link only will be shown if the log in epartner is in "Hotel" category)
7. Click the Log out to log out from the epartner account

Change Password

Username	ciowhoon
Old Password	Aaaaaa
New Password	Pawdhan
Reenter New Password	Pawdhan

Submit

Figure 17: Change password page for epartner

1. Key in the username
2. Enter the old password for validation
3. Enter the new password
4. Reenter the new password for confirmation
5. Click the "Submit" button to change the password

Change Password

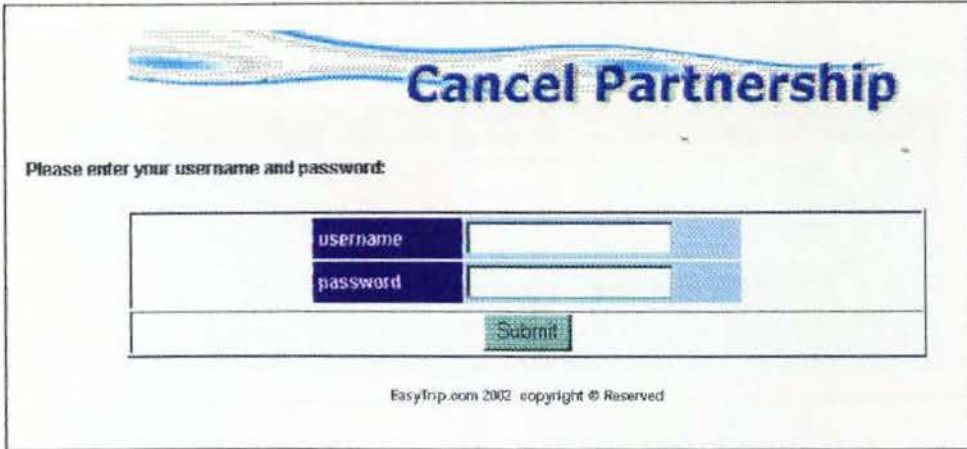
Your password has been **changed**

[continue](#)

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Figure 18: Password changed page

1. Success message will be displayed if the password been changed
2. Click the continue button to log into the main page



Cancel Partnership

Please enter your username and password:

username	<input type="text"/>
password	<input type="password"/>
<input type="button" value="Submit"/>	

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Figure 19: Partnership cancellation page

1. Enter the username and password
2. Click the “Submit” button to cancel the partner



Cancel Partnership

Your partnership has been **cancelled** successfully

[home](#)

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Figure 20: Partnership cancellation success

1. Success message displayed when the partnership cancellation is success
2. Click on the home to proceed to home page

3. Administrator module

Administrator Login

login name:

password:

[change password](#) | [create new login](#)

Login

Figure 21: Administrator Login Main Page

1. Enter the login name for the administrator
2. Enter the password
3. Click on the [change password](#) link to change the administrator password
4. Click on the [create new login](#) link to create the new login for administrator

Create New Administrator Login

Login ID:

Password:

Reenter password:

Enter

[Main Page](#)

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Figure 22: Create New Administrator Page

1. Before proceed to this New Administrator Login, the user must login with the existing ID and password
2. Enter the new Login ID, password and reenter password to create the new administrator login
3. Click the "Enter" button to submit the information



Figure 23: Administrator Main Page

1. Click the "Member Info" button to view the member information main page
2. Click the "ePartner Info" button to view the epartner information main page
3. Click the "Reservation" button to view the reservation record
4. Click the "Tour Package" button to view the tour package record
5. Click the "Manage Tour" to proceed to tour package management page
6. Click the "Manage Flight" to proceed to flight schedule management page
7. Click the "Manage Train" to proceed to train schedule management page
8. Click the "Report" to view the usage tracking report main page
9. Click the "Newsletter" to create the newsletter for the member
10. Click the "Feedback" button to proceed to feedback management main page
11. Click the "Currency" to link to currency update page

Member Record

Today is 1/21/2003 10:43:23 PM

Total member : 31

Total new member today : 0

Total member in newsletter list : 27

1

[View member basic information](#)

[View newsletter member list](#)

[Reservation Record](#)

[Tour Package Booking Record](#)

[View member details information](#)

[Administrator Main Page](#)

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2

3

4

5

6

7

Figure 24: Member Record Main Page

1. Display the latest number of member in the database
2. Link to view the member basic information (sort by month of enter date)
3. Link to view the members in newsletter list
4. Link to view the member reservation record
5. Link to view the member's tour package booking page
6. Link to the member's details information report page
7. Back to the administrator main page

Members' Record

View the member entered in (month):

- Select -

GO

1

2

Member Basic Personal Information Enter in January

<div><div>Username: takashi</div><div>Fullname: Takashi Kaneichiro</div><div>Country: Japan</div><div>Member date in: 1/12/2002</div></div>	
<div><div>Username: andy</div><div>Fullname: Andy Lau</div><div>Country: Hong Kong</div><div>Member date in: 1/12/2002</div></div>	
<div><div>Username: patty</div><div>Fullname: fong patty</div><div>Country: Azerbaijan</div><div>Member date in: 1/12/2002</div></div>	3
<div><div>Username: milky</div><div>Fullname: chung milky</div><div>Country: bulgaria</div><div>Member date in: 1/9/2003</div></div>	
<div><div>Username: ma</div><div>Fullname: ma ma</div><div>Country: Equatorial Guinea</div><div>Member date in: 1/12/2003</div></div>	

Page 1 | 21 All

4

Figure 25: Member Basic Information Page

- 1. Select the month of record wish to view
- 2. Click the “GO” button to submit the month
- 3. All the related member’s record will be displayed
- 4. Click here to view the next page for more member’s information

Information needed in the Member's Details report

Please select the field to be displayed in **Member's Details** report

Basic information

☒ Member ID (recommended)

☒ User name

☒ Password

☐ Entry Date

Contact information

☐ Email Address

☐ Address

☐ Telephone number

☐ Fax number

Personal information

☐ Birthday

☐ Gender

Submit

[Member Record Main Page](#)

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Figure 26: Member's details information page 1

1. Check the fields that wish to include in the member's information report
2. Click the "Submit" button to submit the information

Report of Member Details	
Login ID : 8	
User Name : takashi	
Password : 123456	
Login ID : 10	
User Name : donggun	
Password : lostmemory	
Login ID : 11	
User Name : andy	
Password : 999999	
Login ID : 13	
User Name : yanzi	
Password : sunyanzi	
Login ID : 14	
User Name : david	
Password : davidtao	

Page: 1 | [2](#) | [3](#) | [4](#) | [5](#) | [6](#) | [7](#) | [All](#)

[Member Record Main Page](#)

[Print](#)

Figure 27: Member's details information page 2

1. The page will displayed all the member's field that have been selected in member's details information page 1
2. Click the link continue to the others pages of member's details information
3. Click on the link to go to members record main page
4. Click the "Print" button to print this page

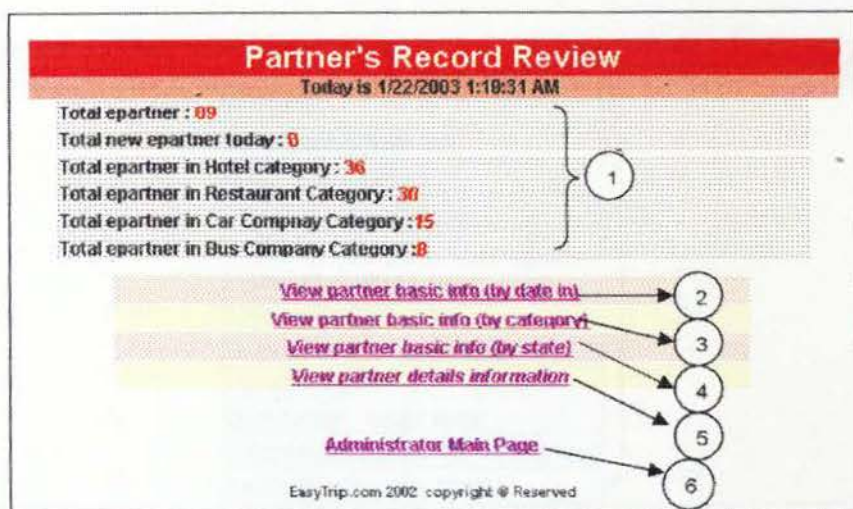


Figure 28: Epartner's Record Main Page

1. Show the latest numbers of epartner in the Easytrip.com
2. Link to view the partner basic information (sort by month of date enter)
3. Link to view the partner basic information (sort by service category)
4. Link to view the partner basic information (sort by the state of epartner)
5. Link to view the partner details information, can choose the fields which like to include in the report
6. Back to the administrator main page

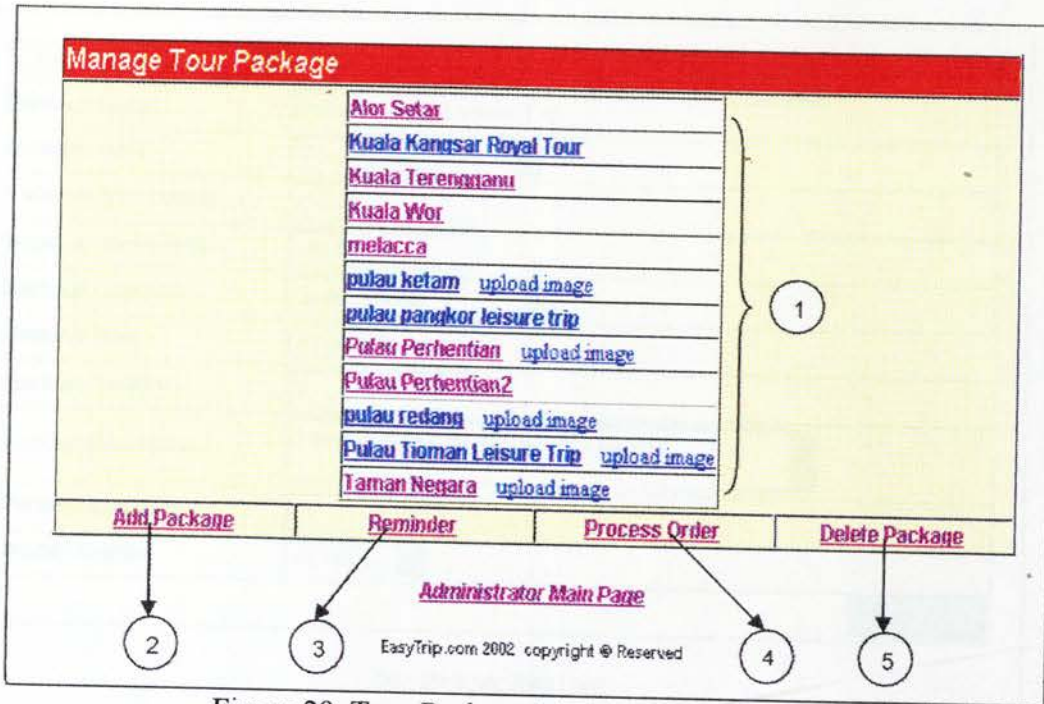


Figure 29: Tour Package Management Main Page

1. List of the active tour package, if the tour package has not upload image, then the link for upload image will appear. Click on the link to upload the image for the related tour package.
2. Link to add the new tour package
3. Link to send the reminder for the member about the tour package that they have booked
4. Link to the process order page that show the order status for the tour package
5. Link to delete the tour package that has been expired

Add New Tour Package	
Package Name:	<input type="text" value="Pulau Redang Leisure Trip"/>
Package State:	<input type="text" value="Terengganu"/>
Package Price (Adult):	<input type="text" value="250.00"/>
Package Price (child):	<input type="text" value="190.00"/>
Package Category:	<input type="text" value="Sight Seeing"/>
Package Date:	<input type="text" value="30/2/2003"/>
Package Duration:	<input type="text" value="3"/>
Package Description:	<input type="text" value="3 days 2 nights on the beautiful island"/>
Package Max Pax:	<input type="text" value="50"/>
Product Status:	<input type="text" value="ACTIVE"/>
<input type="button" value="Add Tour"/>	

[Tour Package Main Page](#)

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Figure 30: Add New Tour Package Page

Pulau Pangkor was added to the database → 1

Manage Tour Package	
Alor Setar	
Kuala Kangsar Royal Tour	
Kuala Terengganu	
Kuala Wkr	
melacca	
pulau ketam	upload image
Pulau Pangkor	upload image
pulau pangkor leisure trip	
Pulau Perhentian	upload image
Pulau Perhentian2	
pulau redang	upload image
Pulau Redang Leisure Trip	upload image
Taman Negara	upload image
Add Package	Reminder
Process Order	Delete Package

Figure 31: New tour package added successfully into database

1. Success message will be displayed if the new tour package has been added into ETIS database

Are you sure want to delete the Tour Package?

Tour Package Information

Package name	Alor Setar	1
Package Price (Adult):	250	
Package Price (Child) :	150	
Package Category:	Adventure	
Package Date:	5/21/2003	
Package duration:	3	
Package description:	3 days 2 nights in the capital city of Kedah	
Package status:	0	
2 ← <input type="button" value="Delete"/> <input type="button" value="Cancel"/> → 3		

Figure 32: Delete tour package from the database

1. Display the related tour package information
2. Click the "delete" button to delete the tour package permanently
3. Click the "cancel" button to cancel the delete action

Tour Package Deleted

The tour package is **deleted** from the timetable!

[Tour Main Page](#)

Figure 33: Success message if the tour package been deleted

Manage Flight Schedule

- Flight from Butterworth to Kuala Lumpur
- Flight from Muar to Alor Setar
- Flight from Johor Bahru to Alor Setar
- Flight from Kota Kinabalu to Kuala Lumpur
- Flight from Miri to Kudat
- Flight from Kota Kinabalu to Johor Bahru
- Flight from Kota Kinabalu to Ipoh

Add Flight **Delete Flight**

Figure 34: Flight schedule management main page

1. List of the flight schedule of Easytrip.com
2. Click on the link to add new flight to the flight schedule
3. Click on the link to delete the flight from the flight schedule

Update Flight Time Table

Plane From: Johor Bahru

Plane To: Alor Setar

Plane State From: Johor

Plane State To: Kedah

Plane First Price: RM199.00

Plane Economy Price: RM150.00

Plane Leave Day: Mon

Plane Leave Time: 0900 1640

Update Plane

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Figure 35: Update flight time table main page

1. Edit the related field, all fields are compulsory
2. Click the "Update Plane" button to submit the information



Figure 36: Usage tracking report main page

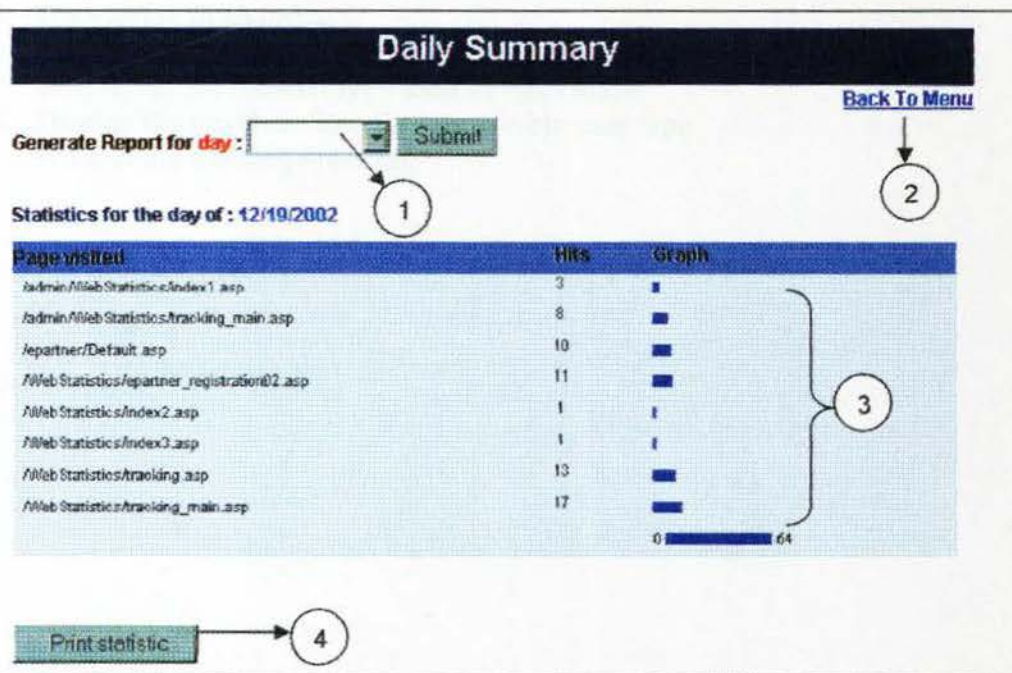


Figure 37: Daily usage tracking report

1. Select the day of the report wish to view for
2. Back to web usage tracking main page
3. Show all the hits for the pages on the date selected
4. Click the "Print Statistic" button to print this page

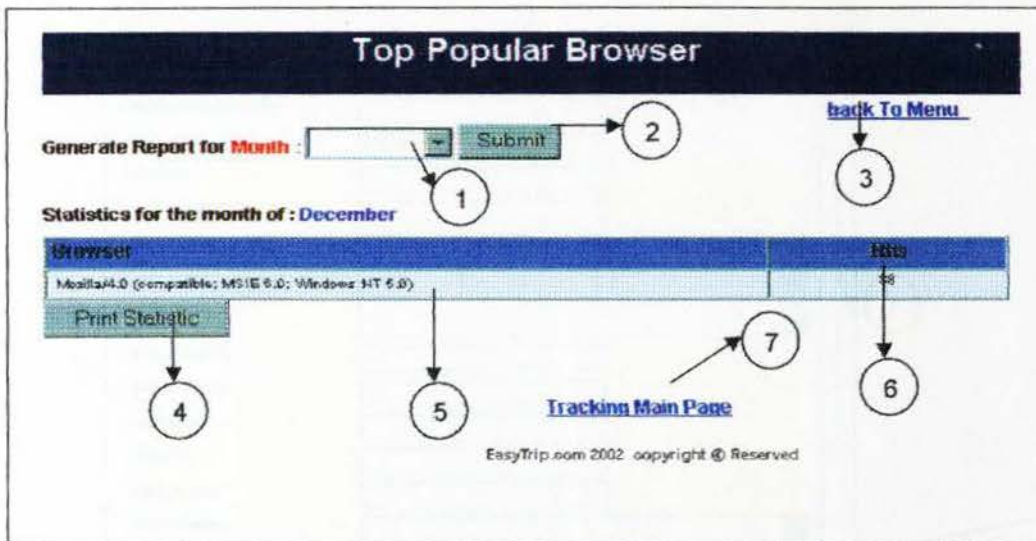


Figure 38: Top popular browser by visitor

1. Select the month of report wish to view for
2. Click the "Submit" button to submit the information
3. Back to the main menu
4. Click on the "Print Statistic" button to print this page
5. Display all the browser type used by the visitors
6. Display the total hits from the specific browser type
7. Back to the tracking main page

Create Newsletter For EasyTrip's Members

Newsletter volume	<input type="text"/>
Newsletter Date	<input type="text" value="1/22/2003"/>
Item ID	<input type="text"/>
Item Name	<input type="text"/>
Description	<input type="text"/>
Price (Adult)	<input type="text"/>
Price (child)	<input type="text"/>
Valid Till	<input type="text"/>
Item ID	<input type="text"/>
Item Name	<input type="text"/>
Description	<input type="text"/>
Price (Adult)	<input type="text"/>
Price (child)	<input type="text"/>
Valid Till	<input type="text"/>

1

Item ID	<input type="text"/>
Item Name	<input type="text"/>
Description	<input type="text"/>
Price (Adult)	<input type="text"/>
Price (child)	<input type="text"/>
Valid Till	<input type="text"/>

2

3

Figure 39: Create newsletter for the member

1. Fill in all the column to generate the newsletter
2. Click the "addnews" button to submit the information
3. Click the "Reset" to clear all the information
4. The newsletter generated will be sent to the user by email